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March 7, 1996

Dr. Arthur Poland  
Technical Officer  
Lab for Astronomy and Solar Physics  
Code 682  
NASA/Goddard Space Flight Center  
Greenbelt, Maryland 20771

Re: NAG5-2754

Dear Dr. Poland:

Enclosed are three copies of the annual progress report on the above cited grant, "Preparation of Flight Operations and IWS Integration of the CELIAS Experiment on the SOHO Spacecraft", Project Director, Dr. Fred Ipavich.

Sincerely,

A handwritten signature in cursive script, appearing to read "Patricia A. Ipavich".

Patricia A. Ipavich  
Research Coordinator

cc. Gloria Blanchard, Code 216 - Transmittal Ltr.  
NASA Scientific & Technical Information Facility - 2 copies of report  
John Chinn, UMD Research Administration - Transmittal Ltr.

During this reporting time period, the following activities took place:

- Generation of several versions of the CELIAS (STOF/SEM/CTOF/MTOF/DPU) commissioning timeline for the first 180 days after launch. These were written and submitted by A. Galvin after consultation (phone, fax, e-mail, meetings ) with the CELIAS Instrument Manager and Lead-Co-I's.
- Identification of several problems with the CELIAS portion of the Project Data Base (PDB). Meetings with the Flight Operations Team regarding PDB, critical commands, etc.
- Attend Science Operations Working Group (SOWG) Meetings (November 1994, February 1995, May 1995) and Flight Operations Review Meeting (July 1995).
- Participate in Flight Operation Simulations SIM 1 (November 14-18, 1994), SIM 2 (May 1-4, 1995) and SIM3 (August 7-11, 1995).
- Participate in the Ground System Compatibility Test Rehearsal (April 24-28, 1995), GSCT #2 (May 30-June 14, 1995), GSCT #3 (September 12-22, 1995), and GSCT #4b (October 30-November 5, 1995).

A small portion of the documentation for the above cited activities is appended.

# **CELIAS TIMELINE FOR THE FIRST 180 DAYS**

**Submittal version 3.0**

**29-NOV-1994**

**(Submitted by: A.B. GALVIN)**



### Abbreviated TIMELINE:

DAY 0 + 1H TO DAY 4:	COMMENCE THERMAL CONTROL.
DAY 4:	CELIAS DPU INITIAL TURN ON.
DAY 4:	CTOF INITIAL TURN ON
DAY 4:	INITIAL CTOF CHECKOUT (SSD TEST)
DAY 4:	INITIAL CTOF CHECKOUT (IFC TEST)
DAYS 4 - 12:	CTOF BAKEOUT AND OUTGASSING.
DAY 4:	STOF INITIAL TURN ON
DAY 4:	INITIAL STOF CHECKOUT (IFC TEST)
DAY 4:	INITIAL STOF CHECKOUT (SSD TEST)
DAY 5:	PREPARATION OF CTOF AND STOF FOR MTOF COVER RELEASE
DAY 5:	MTOF INITIAL TURN ON
DAY 5:	MTOF COVER RELEASE
DAY 5:	INITIAL MTOF CHECKOUT (IFC TEST).
DAY 5 - 8:	MTOF BAKEOUT AND OUTGASSING
DAY 5:	RE-TURNON OF CTOF AND STOF AFTER MTOF COVER RELEASE
DAY 8:	SET MTOF/MAIN POST-BAKEOUT RECONFIGURATION
DAY 8-11:	MTOF MAIN & PM MCP INITIAL TURN ON
DAY 12:	PREPARATION OF CTOF AND MTOF FOR STOF SHUTTER RELEASE
DAY 12:	STOF SHUTTER RELEASE
DAYS 12 - 14:	STOF BAKEOUT AND OUTGASSING
DAY 12:	CTOF and MTOF RECONFIGURATION AFTER STOF SHUTTER RELEASE
DAY 12:	CTOF POST-BAKEOUT RECONFIGURATION
DAY 12-180:	CTOF DAILY IFC TEST
DAY 12-14:	CTOF MCP INITIAL TURN ON
DAY 13:	MTOF PROTON MONITOR E/Q INITIAL TURN ON
DAY 14:	STOF POST-BAKEOUT RECONFIGURATION
DAY 14:	SEM INITIAL TURN ON
DAY 14:	MTOF MAIN WAVE E/Q INITIAL TURN ON
DAY 14-19:	STOF MCP1 INITIAL TURN ON
DAY 14-19:	STOF MCP2 INITIAL TURN ON
DAY 14:	CTOF E/Q INITIAL TURN ON
DAY 15:	MTOF WAVE/PM FLIGHT CONFIGURATION
DAY 15:	HSTOF E/Q INITIAL TURN ON
DAY 15-28:	CTOF PAPS INITIAL TURN ON
DAY 16-19:	MTOF MAIN HYPERBOLA INITIAL TURN ON
DAY 16:	STOF E/Q INITIAL TURN ON

DAY 19:	CTOF PREPARATION FOR MCC2
DAY 19:	MTOF PREPARATION FOR MCC2
DAY 19:	STOF & SEM PREPARATION FOR MCC2
DAY 20-22:	S/C MANUEVERS
DAY 23:	CTOF RECONFIGURATION AFTER MCC2
DAY 23:	MTOF RECONFIGURATION AFTER MCC2
DAY 23:	STOF/SEM RECONFIGURATION AFTER MCC2
DAY 24 - 30:	MTOF HYPERBOLA HV TURN ON CONTINUES AFTER MCC2
DAY 30:	MTOF MAIN V <sub>f</sub> INITIAL TURN ON
DAY 60 & 76:	CELIAS CONFIGURATION FOR S/C MANUEVERS
DAY 114:	CTOF PREPARATION FOR HOI
DAY 114:	MTOF PREPARATION FOR HOI
DAY 114:	STOF & SEM PREPARATION FOR HOI
DAY 115-119:	S/C MANUEVERS for HOI
DAY 120:	CTOF RECONFIGURATION AFTER HOI
DAY 120:	MTOF RECONFIGURATION AFTER HOI
DAY 120:	STOF & SEM RECONFIGURATION AFTER HOI
DAY 121-125:	MTOF HYPERBOLA HV TURN ON CONTINUES
DAY > 120:	S/C IN HOP: THRUSTER OPERATIONS

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 10-MAY-1995 17:13:17.71  
To: @SOWG  
CC: GALVIN  
Subj: more soho early ops requests

Dear Celas SOWG distribution:

The following refers to the post-launch early operations timeline:

The timeline for the initial operations on SOHO are in a state of flux, as Matra Marconi has finally given its input and they do not want to turn on instruments as originally planned (i.e., on day 4). I believe that in general the experiment commissioning will not start until on or after day 14.

However, CELIAS (plus one or two other experiments) is still slated for an early low voltage turn on for the purpose of (1) bakeout, and (2) turning on the Solid State Detector bias in CTOF and STOF in order to make sure they are functioning correctly. I spoke to Piet Martens this morning, and we will keep this in the timeline, but officially Piet will tell the project that the SSD test is to assist in the bakeout.

If Piet has problems selling the SSD bias to the project, I have spoken to Fredi Buergi this morning, and we feel that it is not important enough to make an issue out of it. I have told Piet that the SSD bias is the only bias we would turn-on during this two week period -- no High Voltage commands would be sent.

As far as breaking up the procedures into smaller chunks of time -- I think this has to be done by each sensor team, as you have to decide if the sensor can be left in a particular state overnight until the next commanding session is available. The problem has to do with the fact that we will not have 24 hour command capability, so smaller time chunks may be required (some commanding times are only 1.3 hours long, and that also includes the set up time for the FOT).

I had already tried to incorporate some of the relevant information in the original timeline that I gave Piet (and you) last fall (such as estimated duration, preferred time - relative to other operations, etc.)

For your recollection, this came under the action item from the Feb 1995 SOWG:

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13.19 On PIs, due on March 15:

Switch-on scenario. Each instrument team describe the blocks of their activities to be scheduled before MCC2. For each block indicate:

1. Preferred time
2. Earliest time
3. Latest time
4. Estimated duration (no contingency, the FOT will put that in)
5. Where it can be broken in parts, if at all
6. Relevant procedures to be run by FOT
7. Prerequisites
8. Importance

Input to Piet Martens.

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Piet requires the input by the end of the month -- if you can mark up the timeline that you have and fax or express mail your comments within the next 10 days, I can incorporate these into the timeline document.

Thanks, Toni

From: MX%"pmartens@esa.nascom.nasa.gov" 10-MAY-1995 09:24:24.93  
To: MX%"galvin@umdsp.umd.edu"  
Subj: Commissioning

Hi Toni,

Can you reply to this a.s.a.p!! That is today, before 12:30  
(I am flying to ESTEC later today and need some sort of reply).  
I also left a message on your answering machine this morning.

If you can't reach me this morning, please send an e-mail to  
me with copy to Domingo, so I can read it tomorrow morning at  
ESTEC.

First thing I need to know is about early switch-on for  
CELIAS. I have in my notes that it is need to put a bias voltage  
on the high voltage circuits. Is that correct? If so, which part  
of the CELIAS timeline needs to be carried out for that. This  
information I need today.

By the end of the month I will have to submit drafts of the  
experiment timelines arranged in logical blocks, (a block is a  
series of activities that belong logically together, and that have  
to be performed uninterrupted). Looking at the CELIAS timeline I  
find that very difficult. (This request was also formally made  
for the early phase of the commissioning as SOWG13-19). Can you  
make a draft?

Thanks for your help,

Piet





From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 31-MAY-1995 22:45:08.99  
To: MX%"pmartens@esa.nascom.nasa.gov"  
CC: @SOWG,GALVIN  
Subj: RE: CELIAS Commisioning

Dear Piet,

I have now received input from my CELIAS colleagues regarding early operations:

STOF and CTOF will delay any operations until after the first two weeks devoted to s/c operations, but would then like to start operations on the first day that is open for the instrument commanding (day 14 or 15).

MTOF would like to open it's cover on day 10 (with a window of acceptability of day 8 to 12). In order to monitor the opening of the cover, we would need to turn on the DPU and the MTOF sensor. Our preference (this is not a requirement) would be to have the DPU and MTOF sensor remain on after the cover is open. We would like the heaters to remain on with the sensor on, but that is of secondary importance.

The next set of commands would being at or after day 14, when STOF would open its shutter (MTOF would be turned off/on during the STOF shutter opening, or if MTOF is off it as well as CTOF will be turned on after the shutter opening).

The motivation for the early cover opening for MTOF is as follows:

- (1) Improve confidence level on a successful door opening because long delays increase the range of thermal gradients experienced by the door mechanism, and may also affect lubrication levels.
- (2) Improve the thermal environment of the MTOF sensor to decrease the probability of condensation of volatiles on the thermal blanket (said condensation decreases the lifetime and effectiveness of the thermal blanket). This is accomplished by opening the cover, because that increases dramatically the thermal input to the sensor. This would be further aided by keeping the sensor and heaters on after the cover opening.
- (3) Increases the rate of outgassing.

We would require both Sci and Hk data in order to confirm the door opening.

As regards the blocking of commands, this depends on what day we start each sensor activation.

Regards, Toni Galvin

Return-Path: <pmartens@esa.nascom.nasa.gov>  
Received: from gsfc.nasa.gov by UMDSP.UMD.EDU (MX V4.0-1 VAX) with SMTP; Tue, 27 Jun 1995 13:09:19 EDT  
Received: from esa.nascom.nasa.gov by gsfc.nasa.gov (5.65/Ultrix3.0-C) id AA10289; Tue, 27 Jun 95 13:09:55 -0400  
Received: from lion by esa (5.x/SMI-SVR4) id AA25729; Tue, 27 Jun 1995 13:09:54 -0400  
From: pmartens@esa.nascom.nasa.gov (Petrus C. Martens)  
Received: by lion (5.x) id AA00450; Tue, 27 Jun 1995 13:09:52 -0400  
Date: Tue, 27 Jun 1995 13:09:52 -0400  
Message-ID: <9506271709.AA00450@lion>  
To: galvin@umdsp.umd.edu  
Subject: CELIAS commissioning plans  
CC: svaghi@estcs1.estec.esa.nl  
X-Sun-Charset: US-ASCII

Dear Tony,

In preparing a SOHO-wide commissioning plan, I have reached the stage now where I need the commissioning plans for CELIAS updated. Let me first explain what I have from you, and then what is needed.

1. In August last year I received from you a complete and detailed CELIAS timeline
2. Late May I received from you an update and justification for early CELIAS switch-on (i.e. MTOF switch-on at day 10). ESA Project has agreed to this plan.
3. I have used your timeline to try to organize your commissioning plan in so-called blocks, i.e. functional units, that will be scheduled and carried out as blocks. A copy of my attempt is appended to this message.

However, this block schedule is no longer consistent with the CELIAS plans after your changes in early switch-on schedule in reponse to the ESA Project "rules". Therefore I am asking you to review the appended block schedule, correct and update it it where necessary, and in particular rearrange the order and timing of the blocks to coincide with the present CELIAS switch-on plans.

Please reply to me a.s.a.p. (or call 286-9028) to give me an idea of when I can expect input. My preference is input before the end of the week, so your submission can be part of the first issue of the official SOHO Commissioning Plan, to be reviewed at the ESA/NASA Flight Operations Review on July 11 and 12. But if that can't be done it will have to be part of a later issue. However, I still need your input as well to load into the SOHO mission planning tool -- we are in the process now of loading the information of the other experiments.

Thanks for your help,

Piet

[illegible]

## CELIAS COMMISSIONING PLAN ORGANIZED IN BLOCKS

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 31-JUL-1995 19:29:01.80  
To: MX%"pmartens@esa.nascom.nasa.gov"  
CC: IPAVICH, BEDINI, @MPE,GALVIN  
Subj: initial comments on SOHO timeline

Dear Piet,

I am still waiting for input from CTOF, STOF, DPU, and SEM representatives regarding the SOHO timeline dated 24 July 1995. However, I have some items right away to mention - including some information on the MTOF response.

Overall, I think you did an excellent job.

- (1) day 21 & 02:00:05 CELIAS continue normal obs.????? We are in standby here, but I could use the time for something else (see point 4)
- (2) under day 24, you wrote 25 & 16:00 instead of 24
- (3) for day 24 0900-1600 = 7 hours, but you say 8?  
day 25 1000-1600 = 6 hours, but you say 8?  
day 27 0900-1700 = 8 hours, ok  
day 28 0900-1700 = 8 hours, ok  
day 29 0900-1700 = 8 hours, ok
- (4) Specifically regarding the MTOF high voltage turn on: It is ok to start after the MCC2 maneuver, instead of the my original timeline (which started on day 17). BUT ...

MTOF has eight high voltage power supplies. We had planned to turn them on in a staggered manner as outlined below, which takes 9 days (you have 5 days allocated to the combined CELIAS high voltage turn on). These need not be full 8 hour days - the point is that we want to have the MTOF high voltages "sit" at the lower levels on the order of a day or so before going to the next voltage level. The first turn on for any high voltage in space is usually very conservative, and time is allowed for the voltages to "burn off" any residuals left from outgassing. (This is not as essential for subsequent turn ons later in the mission, since the burn off has already been accomplished.)

We also wanted some high voltages turned on before others, since it would tell us more information. For example, having the Microchannel Plates (MCPs) operational before turning on the deflection system allows us to see if the cover has opened, the carbon foil survived, and UV is suppressed. It also allows us to devote our attention to one supply at a time.

Anyway, what we would like, and I am speaking at this time specifically for MTOF until I hear from the other sensors, is to take the time already mentioned for day 21 (point 1 above) and use it to start the MTOF MCP turn on. If an hour were available, that would be even better, but we would take anything.

If we could again get at least a half hour, but better an hour, on any or all of days 22, 23, 26, then in combination with the time you have already allotted, we think we can get MTOF to full operational voltage by the end of day 29, as you have shown.

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 17-AUG-1995 17:49:37.02  
To: @LEAD\_COI, @MPE  
CC: GALVIN  
Subj: celias timeline 4.1 - with some typos corrected!

To: Lead Co-Is:

This is a "cleaned up" version of what I sent you yesterday. I have found instances of miscounting in the "sub-block" numbers, and I have also corrected some misspellings. Some of that was due to working via modem at 1 am - in any case feel free to throw out the earlier version.

Please feel free to comment. I have spoken to most of you, but sometimes writing it down all together shows that some further revisions may be necessary. I am sorry for the rush, but this was due on 15 August, so I must have any further changes immediately!

Toni

TO: ALL LEAD CO-Is:

Please place special attention on the HV turn on. I am concerned about the fact that CTOF, MTOF, STOF, SEM all have HV's going on at one time. Any good suggestions are appreciated.

TO: MARTIN HILCHENBACH (STOF)

I have tried to incorporate both your and Dieter's comments, but sometimes these may not correlate well with the time constraints.

Day 14: Since you now do not want the SSDs on during bakeout, I do not see how to get the background SSD run with shutter-open on the same day as shutter release and before bakeout starts, and having a requirement that the background run be at least 2 hours but a safety requirement that it be less than 4 hrs (i.e., a 4 hour max limit on the test generator). I have put it in, but I will be surprised if you get it all as requested since other experiments have commands that day. If you can suggest a more "friendly" timeline here it would be good.

Is there still any need for the "initial configuration" on day 16 (after bakeout ends) and (I've added request) day 21 after MCC2, as we do not get to do anything with STOF until day 24 after MCC2 anyway?

TO: FRED IPAVICH (MTOF)

Our original request for MTOF HV commanding was condensed by Martens from 11 days (40 hours) to 5 days (40 hours in parallel with CTOF and STOF). I am trying to get 2-4 hours on days 22, 23, 26, and 30, 31, 32, 33 but it definitely means a slower turnon (day 33 instead of our original intent of day 30).

Is there still any need for the "MTOF initial configuration" on day 16 (after bakeout ends), as we do not get to do anything until after MCC2 a

\*\*\*\*\* CELIAS TIMELINE V4.1 (16-AUG-95) \*\*\*\*\*

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; This timeline tries to conform as well as possible to the integrated
; timeline Draft 0.0. But D0.0 did not give us the HV time requested.
; It must be remembered that commands cannot be sent "simultaneously" by
; CTOF, MTOF, STOF, and SEM. Only one CELIAS IWS can command at a given time,
; and if FOT TSTOL procedures are used, no commands can be sent from the
; IWS until the procedure ends. (Most HV sequences were expected to be
; TSTOL procedures, although none exist yet.) However, we can run in
; parallel in the sense by using the command times allocated to other CELIAS
; sensors as "wait-and monitor" periods for a given sensor.

; MTOF has not requested any revisions.

; CTOF has revised its HV procedures to be spread over 6 days
; (HGruenwaldt, fax 15Aug95)

; STOF/SEM has revised its HV request to be two days, 4hours/day , for a
; total of 8 hours (can run concurrent with CTOF and MTOF if feasible),
; but without specific details as to power supplies - so I have
; simply assigned time units (DHovestadt, meeting GSFC 11Aug95)

; I try not to send any HV commands for the last hour of command
; availability, so that we can monitor the last HV commands and
; change configuration to a lower level if needed. This is not
; meant to be an "overflow" command period for running late!
; Rather, the intent is that we have time to monitor a high voltage
; change for at least an hour before command capability is lost. I
; indicate this as "Evaluation Time".

; Obviously, if a sensor has an emergency, it will need to access the
; command time that may nominally assigned to another CELIAS sensor.
; I think we have to deal with it as (or if) it occurs.
; ALSO - The SOC is supposed to added contingency time to
; our request, we have been asked not to do so.

; I have mixed up the time allocation among the sensors in order to
; make one sensor's "wait and monitor" period another sensor's command
; period. That is why there are certain time orders suggested. These
; are internal to CELIAS use for planning purposes, and can be changed.
; It is an attempt to see how much time is really needed, with commanding
; of different CELIAS units running in parallel.

; In looking over the original request in CELIAS timeline version 4.0,
; we had requested the following time allocation for high voltage turn on:

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;
; CELIAS UNIT                V4.0 (*)                V4.1
; -----
; CTOF                        26 hours                15.5 hours
; MTOF                        34 hours                20.25 hours
; STOF/SEM                    16.5 - 28.5 hours        8.5 hours
; EVALUATION TIME             0                      8 hours
; (before loss of
; command capability)
;
; TOTAL                      76.5 - 88.5 hours (*)    52.25 hours

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; (*) In Version 4.0, many of these units were expected to run
; HV commands in parallel, so actual command time would have
; been less, but it was unclear how much less. In version
; 4.1, I have tried to take the "parallel" commanding into

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account.

New attempt for HV timeline as follows:

Day 22. NO CELIAS TIME ASSIGNED.

MTOF request for 2.5 hours - this allows MCPs to only get to level 110 (four MCPs, requiring limits, levels, enables for 3 separate levels)

Day 23. NO CELIAS TIME ASSIGNED.

MTOF request for 2 hours - MCPs to new warm up level 125, but still not operational. (Before, this level was reached on one day, but for that we need 4 hours of command time.)

Day 24. Because of changes in CTOF and STOF schedules, there will no longer be 8 hours on day 24 for HV commanding, even if MTOF can get some commands in near the start. The following assumes MTOF got the required time (or more) on days 22 and 23.

summary:	STOF/SEM	gets 2:25 hrs command time
	CTOF	gets 2:30
	MTOF	gets 2:15

Note: obviously, limits as well as levels have to be set and verified for a given high voltage, so multiple commands are involved.

09:00 - 09:15	STOF starts IFC, then turns over commands to MTOF
09:15 - 10:00	MTOF four MCPs increase by one level to 130, then turns over commands to CTOF
10:00 - 10:30	CTOF initial configuration, then over to STOF
10:30 - 10:40	STOF stops IFC, then over to MTOF
10:40 - 11:25	MTOF four MCPs one level to 135
11:25 - 12:25	CTOF MCPs levels 0 and 1, HVPS to step 0 (4kV)
12:25 - 13:25	STOF one hour (1 of 8 requested hours)
13:25 - 14:10	MTOF MCPs one level to 140 (NEUTRAL, PM MCPs opera
14:10 - 15:10	CTOF MCPs level 2 and 3, HVPS to step 1 (10kV)
15:10 - 16:10	STOF one hour (2 of 8)
16:10 - 17:00	EVALUATION command period (end of Commanding at 1

Day 25. HV turn on continues

summary:	STOF/SEM	gets 3:30 hrs command time
	CTOF	gets 1:00
	MTOF	gets 2:30

09:00 - 09:30	MTOF START and ION MCPs to level 145 (START MCP o
09:30 - 10:30	CTOF MCPs to level 4, HVPS to step 2 (15kV)
10:30 - 11:30	STOF 1 hour (3 of 8)
11:30 - 12:00	MTOF ION MCP to level 150
12:00 - 13:00	STOF 1 hour (4 of 8)
13:00 - 13:30	MTOF ION MCP to level 155 (ION MCP operational)
13:30 - 14:30	MTOF PM E/Q initial turn on (3kV)
14:30 - 16:00	STOF 1.5 hour (5.5 of 8)
16:00 - 17:00	EVALUATION command period

DAY 26. NO CELIAS TIME ASSIGNED.

No CELIAS time in D0.0, but here request 30 minutes. Trying to

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;           get PM operational by day 27
;
;           00:00 - 00:30  MTOF PM E/Q to 4 kV.
;
;           DAY 27.  CELIAS 8 hours of HV commanding.
;
;           summary:           STOF/SEM  gets 2:00 hrs command time
;                               CTOF      gets 1:30
;                               MTOF      gets 3:30
;
;           09:00 - 10:00  MTOF HPS to 0, 50
;           10:00 - 10:30  CTOF MCP to level 5
;           10:30 - 11:00  CTOF HVPS to step 3 (19 kV, minimum operational)
;           11:00 - 11:30  MTOF HPS to level 80
;           11:30 - 13:30  STOF 2 hour (7.5 of 8)
;           13:30 - 15:30  MTOF WAVE to 4kV (Fred: I reduced this from 3 to
;           15:30 - 16:00  CTOF MCP close to level 4
;           16:00 - 17:00  EVALUATION command period
;
;           DAY 28.  CELIAS 8 hours of HV commanding.
;
;           summary:           STOF/SEM  gets 1 hrs command time
;                               CTOF      gets 4:30
;                               MTOF      gets 1:30
;
;           09:00 - 09:30  MTOF HPS to level 90
;           09:30 - 10:00  CTOF MCP to level 6
;           10:00 - 10:30  CTOF HVPS to step 4 (23 kV, CTOF HVPS operationa
;           10:30 - 11:00  MTOF HPS to level 100
;           11:00 - 12:00  STOF 1 hour (8.5 of 8, STOF/SEM operational)
;           12:00 - 12:30  MTOF WAVE to 6 kV
;           12:30 - 15:30  CTOF VVPS turn on (3 hours reserved time needed)
;           15:30 - 16:00  CTOF MCP close to level 5 (CTOF MCP operational)
;           16:00 - 17:00  EVALUATION command period
;
;           DAY 29.  CELIAS 8 hours of HV commanding.
;
;           summary:           CTOF      gets 3:00 hrs of command time
;                               MTOF      gets 1:30
;
;           09:00 - 09:30  MTOF HPS to level 110
;           09:30 - 10:30  CTOF VVPS turn on (1 of 3 hours reserved time)
;           10:30 - 11:00  MTOF HPS to level 120
;           11:00 - 13:00  CTOF VVPS turn on (last 2 of 3 hours reserved ti
;           13:00 - 13:30  MTOF WAVE to 8 kV
;           13:30 - 14:30  EVALUATION command period
;           14:30 - 17:00  Time can be released to other experiments, or
;                           does MTOF feel lucky and want to go higher??
;
;           DAY 30.  NO TIME ASSIGNED TO CELIAS.
;           REQUEST for 4 hours of HV commanding
;
;           09:00 - 09:30  MTOF HPS to level 130
;           09:30 - 12:30  CTOF VVPS turn on (3 hours reserved time, CTOF o
;           12:30 - 13:00  EVALUATION command period (half hour only).
;
;           DAY 31.  NO TIME ASSIGNED TO CELIAS.
;           REQUEST for 2 hours of HV commanding

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;          09:00 - 09:30    MTOF WAVE to 10 kV.
;          10:30 - 11:00    MTOF HPS to 140
;          11:00 - 12:00    EVALUATION command time.

;    DAY 32. NO TIME ASSIGNED TO CELIAS.
;          REQUEST for 2.5 hours of HV commanding

;          09:00 - 09:30    MTOF WAVE to full operational voltage.
;          10:30 - 11:00    MTOF HPS to 150
;          12:00 - 12:30    MTOF HPS to 160
;          12:30 - 13:30    EVALUATION command time.

;    DAY 33. NO TIME ASSIGNED TO CELIAS.
;          REQUEST for 2 hours of HV commanding

;          09:00 - 09:30    MTOF Vf to +-1 kV (minimum operational voltage)
;          10:30 - 11:00    MTOF HPS to 170 (minimum operational voltage)
;          12:00 - 13:00    EVALUATION command time.

;          ***** TIMELINE FORMAT *****

; Time-line has the format:
; Time # Experiment Name or SVM # Sheet Identifier: Action # Duration, Notes

; Time has the format: d & hh:mm:ss, or d & hh:mm

; Blank lines and comment lines -- preceeded by ";" -- are ignored

; The purpose of this format is to make the file machine readable for ease of sc
; and transfer to planning tools

;          ***** BLOCK GROUPING OF PROCEDURES *****

; "BLOCKS" are used to differentiate different types of activities. The
; following designation has been requested by the SOC:
;          1: (early) switch on
;          2: functional commissioning
;          3: calibrations
;          4: science tests
; and I've added number block 5
;          5: s/c maneuvers
; Different activities within a block that can (or must) be scheduled at
; different days are registered as sub-blocks, which would be the largest
; unit that must be uninterrupted during the same s/c contact. A
; sub-block can consist of a whole sequence of experiment
; commands or operations.

; I do not believe the above designation works too well with CELIAS as we
; have 5 separate units turning on at different times (DPU, CTOF, STOF, MTOF,
; SEM), but I use it to comply with the SOC's request.

;          ***** REVISIONS *****

; The following is derived from Draft 0.0 by P. Martens (dated 24 July 1995)
; This draft version includes an attempt at incorporating the CELIAS requested
; timeline (CELIAS timeline version 4.0, dated 21 July 1995) into the s/c and
; other experiment requests.

```

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 24-AUG-1995 20:40:16.71  
To: MX%"pmartens@esa.nascom.nasa.gov"  
CC: GALVIN  
Subj: extended version of CELIAS HV plans - for your info

Dear Piet,

In order to help you understand the requests I made regarding the HV times for CELIAS, this is the more detailed timeline of how the high voltage command sequences plan to be sent, assuming you can find us the time on the appropriate days.

best regards, toni galvin

; \*\*\*\*\* CELIAS HIGH VOLTAGE TIMELINE V4.2 (24-AUG-95) \*\*\*\*\*

; It must be remembered that commands cannot be sent "simultaneously" by  
; CTOF, MTOF, STOF, and SEM. Only one CELIAS IWS can command at a given time,  
; and if FOT TSTOL procedures are used, no commands can be sent from the  
; IWS until the procedure ends. (Most HV sequences were expected to be  
; TSTOL procedures, although none exist yet.) However, we can run in  
; parallel in the sense of using the command times allocated to other CELIAS  
; sensors as "wait and monitor" periods for another CELIAS sensor.

; After a review of SOHO timeline D0.0 by the CELIAS PI and Lead Co-Is,  
; the following changes to the MTOF, CTOF, STOF, SEM high voltage sequences  
; were requested:

; MTOF changed some details, but not total time request (FIpavich,UMd 18Aug95).

; CTOF has revised its HV procedures to be spread over 6 days  
; (HGruenwaldt, fax 15Aug95)

; STOF/SEM has revised its HV request to be two days, 4hours/day , for a  
; total of 8 hours (can run concurrent with CTOF and MTOF if feasible),  
; but without specific details as to power supplies - so I have  
; simply assigned time units (DHovestadt, meeting GSFC 11Aug95)

; I try not to send any HV commands for the last hour of command  
; availability, so that we can monitor the last HV commands and  
; change configuration to a lower level if needed. This is not  
; meant to be an "overflow" command period for running late!  
; Rather, the intent is that we have time to monitor a high voltage  
; change for at least an hour before command capability is lost. I  
; indicate this as "Evaluation Time".

; I have mixed up the time allocation among the sensors in order to  
; make one sensor's "wait and monitor" period another sensor's command  
; period. That is why there are certain time orders suggested. These  
; are internal to CELIAS use for planning purposes, and can be changed.  
; It is an attempt to see how much time is really needed, with commanding  
; of different CELIAS units running in parallel.

; In looking over the original request in CELIAS timeline version 4.0,  
; we had requested the following time allocation for high voltage turn on:

CELIAS UNIT	V4.0 (*)	V4.2
-------------	----------	------

-----

CTOF	26 hours	15.75 hours
MTOF	34 hours	21.50 hours
STOF/SEM	16.5 - 28.5 hours	8.5 hours
EVALUATION TIME	0	8.3 hours
(before loss of command capability)		
TOTAL	76.5 - 88.5 hours (*)	54.05 hours

(\*) In Version 4.0, many of the CELIAS units were expected to receive HV commands in parallel, so actual command times were expected to be less than the total given here, but it was unclear how much less. In version 4.2, I have tried to take "parallel" commanding specifically into account in order to get a more accurate time estimate.

New attempt for HV timeline as follows:

Day 22. NO CELIAS TIME ASSIGNED.

MTOF request for 2.5 hours - this allows MTOF MCPs to get to level 110 (four MCPs, requiring limits, levels, enables for 3 separate levels)

summary:	STOF/SEM	0 hrs command time
	CTOF	0
	MTOF	2:30

Day 23. NO CELIAS TIME ASSIGNED.

MTOF request for 2 hours - START/NEUTRAL/ION/PM (SNIP) MCPs to increased warm up levels SNIP = 120, 130, 125, 125. Still not operational.

summary:	STOF/SEM	0 hrs command time
	CTOF	0
	MTOF	2:00

Day 24. Because of changes in CTOF and STOF schedules, there will no longer be 8 hours on day 24 for HV commanding. The following MTOF got the required time (or more) on days 22 and 23.

summary:	STOF/SEM	2:25 hrs command time
	CTOF	2:45
	MTOF	2:00

Note: obviously, limits as well as levels have to be set and verified for a given high voltage, so multiple commands are involved.

09:00 - 09:15	STOF starts IFC, then turns over commands to MTOF
09:15 - 10:00	MTOF PM threshold = 0. MTOF four MCPs increase by one level to SNIP = 125, 135, 130, 130, then turns over commands to CTOF
10:00 - 10:30	CTOF initial configuration, then over to STOF
10:30 - 10:40	STOF stops IFC, then over to MTOF
10:40 - 11:25	MTOF four MCPs one level to SNIP = 130, 140, 135, 135 N operational at 140
11:25 - 12:25	CTOF MCPs levels 0 and 1, HVPS to step 0 (4kV)
12:25 - 13:25	STOF one hour (1 of 8 requested hours)
13:25 - 13:55	MTOF MCPs one level to SIP = 135, 140, 140 P operational

13:55 - 15:10 CTOF MCPs level 2 and 3, HVPS to step 1 (10kV)  
15:10 - 16:10 STOF one hour (2 of 8)  
16:10 - 17:00 EVALUATION command period (end of Commanding at 1

Day 25. HV turn on continues

summary: STOF/SEM 3:30 hrs command time  
CTOF - 1:00  
MTOF 2:30

09:00 - 09:30 MTOF START and ION MCPs to levels SI=140,145  
09:30 - 10:30 CTOF MCPs to level 4, HVPS to step 2 (15kV)  
10:30 - 11:30 STOF 1 hour (3 of 8)  
11:30 - 12:00 MTOF START and ION MCPs to levels SI=145,150  
S, I operational  
12:00 - 13:00 STOF 1 hour (4 of 8)  
13:00 - 13:30 MTOF PM E/Q initial turnon to 2kV, not stepping  
13:30 - 14:30 MTOF PM E/Q turn on to 3kV, not stepping  
14:30 - 16:00 STOF 1.5 hour (5.5 of 8)  
16:00 - 17:00 EVALUATION command period

DAY 26. NO CELIAS TIME ASSIGNED.

No CELIAS time in D0.0, but here request 30 minutes. Trying to  
get PM operational by day 27 for use by CTOF for its turn on.

summary: STOF/SEM 0 hrs command time  
CTOF 0  
MTOF 0:30

00:00 - 00:30 MTOF PM E/Q to 4 kV, not stepping

DAY 27. CELIAS 8 hours of HV commanding.

summary: STOF/SEM 2:00 hrs command time  
CTOF 1:30  
MTOF 3:30

09:00 - 10:00 MTOF HPS to 0, 50  
10:00 - 10:30 CTOF MCP to level 5  
10:30 - 11:00 CTOF HVPS to step 3 (19 kV, minimum operational)  
11:00 - 11:30 MTOF HPS to level 80  
11:30 - 13:30 STOF 2 hour (7.5 of 8)  
13:30 - 15:30 MTOF WAVE to 6kV  
15:30 - 16:00 CTOF MCP close to level 4  
16:00 - 17:00 EVALUATION command period

DAY 28. CELIAS 8 hours of HV commanding.

summary: STOF/SEM 1 hrs command time  
CTOF 4:30  
MTOF 1:30

09:00 - 09:30 MTOF HPS to level 90  
09:30 - 10:00 CTOF MCP to level 6  
10:00 - 10:30 CTOF HVPS to step 4 (23 kV, CTOF HVPS operationa  
10:30 - 11:00 MTOF HPS to level 100  
11:00 - 12:00 STOF 1 hour (8.5 of 8, STOF/SEM operational)

; 12:00 - 12:30 MTOF WAVE to 8 kV  
; 12:30 - 15:30 CTOF VVPS turn on (3 hours reserved time needed)  
; 15:30 - 16:00 CTOF MCP close to level 5 (CTOF MCP operational)  
; 16:00 - 17:00 EVALUATION command period

; DAY 29. CELIAS 7 hours of HV commanding.

; summary: STOF/SEM 0:00 hrs of command time  
; CTOF- 3:00  
; MTOF 3:00

; 09:00 - 09:30 MTOF HPS to level 110  
; 09:30 - 10:30 CTOF VVPS turn on (1 of 3 hours reserved time)  
; 10:30 - 11:00 MTOF HPS to level 120  
; 11:00 - 13:00 CTOF VVPS turn on (last 2 of 3 hours reserved ti  
; 13:00 - 13:30 MTOF WAVE to 10 kV  
; 13:30 - 15:00 MTOF engage nominal mode - first stepping for  
; PMEQU and WAVE  
; 15:00 - 16:00 EVALUATION command period

; DAY 30. NO TIME ASSIGNED TO CELIAS.  
; REQUEST for 4 hours of HV commanding

; summary: STOF/SEM 0:00 hrs of command time  
; CTOF 3:00 hrs  
; MTOF 0:30

; 09:00 - 09:30 MTOF HPS to level 130 (minimal level for ops)  
; 09:30 - 12:30 CTOF VVPS turn on (3 hours reserved time, CTOF o  
; 12:30 - 13:00 EVALUATION command period (half hour only).

; DAY 31. NO TIME ASSIGNED TO CELIAS.  
; REQUEST for 2 hours of HV commanding

; summary: STOF/SEM 0:00 hrs of command time  
; CTOF 0:00  
; MTOF 1:00

; 09:00 - 09:30 MTOF WAVE to 11 kV.  
; 10:30 - 11:00 MTOF HPS to 140  
; 11:00 - 12:00 EVALUATION command time.

; DAY 32. NO TIME ASSIGNED TO CELIAS.  
; REQUEST for 2.5 hours of HV commanding

; summary: STOF/SEM 0:00 hrs of command time  
; CTOF 0:00  
; MTOF 1:30

; 09:00 - 09:30 MTOF WAVE to 12 kV (full operational voltage)  
; 10:30 - 11:00 MTOF HPS to 150  
; 12:00 - 12:30 MTOF HPS to 160  
; 12:30 - 13:30 EVALUATION command time.

; DAY 33. NO TIME ASSIGNED TO CELIAS.  
; REQUEST for 2 hours of HV commanding

; summary: STOF/SEM 0:00 hrs of command time

```

;                               CTOF      0:00
;                               MTOF      1:00
;
;      09:00 - 09:30    MTOF Vf to +-1 kV (nominal voltage for
;                       first month of operations)
;      10:30 - 11:00    MTOF HPS to 170 (nominal voltage for
;                       first month of operations)
;      12:00 - 13:00    EVALUATION command time.

```

From: MX%"pmartens@esa.nascom.nasa.gov" 29-AUG-1995 17:11:39.25  
To: MX%"galvin@umdsp.umd.edu"  
CC:  
Subj: Re: celias timeline revisions

Return-Path: <pmartens@esa.nascom.nasa.gov>

Received: from gsfc.nasa.gov by UMDSP.UMD.EDU (MX V4.0-1 VAX) with SMTP; Tue, 29 Aug 1995 17:11:26 EDT

Received: from esa.nascom.nasa.gov by gsfc.nasa.gov (5.65/Ultrix3.0-C) id AA03477; Tue, 29 Aug 95 17:11:44 -0400

Received: from lion by esa (5.x/SMI-SVR4)id AA10038; Tue, 29 Aug 1995 17:12:41 -0400

From: pmartens@esa.nascom.nasa.gov (Petrus C. Martens)

Received: by lion (5.x) id AA01864; Tue, 29 Aug 1995 17:12:39 -0400

Date: Tue, 29 Aug 1995 17:12:39 -0400

Message-ID: <9508292112.AA01864@lion>

To: galvin@umdsp.umd.edu

Subject: Re: celias timeline revisions

X-Sun-Charset: US-ASCII

Dear Tony,

I am working on the CELIAS timeline, and I have the following questions/comments:

1. I did not get anything beyond block 2 or day 33. Did it get cut off, or are you still working on it?
2. You will certainly get all the time you think you need. But what I cannot guarantee is that you can have it at the days you want it, since there are competing demands on time by the other instruments.
3. This (point 2) is why I prepared block-sheets (CELIAS Block 1 and 2 are appended), which summarize all the task information, their durations, and their interrelationships. I am putting all this information in the "Microsoft Project" scheduling tool, and let it produce a schedule. This allows me to check whether all the experiment requests can be met. It would also allow rapid rescheduling in the case of unexpected events after launch. (For example, if it turns out that MCC2 has to take place 14 days after launch instead of 20).
4. Please review the appended blocks for CELIAS with the above (point 3) in mind. I am not quite happy with their internal consistency. For example, why is "1.16 CTOF Initial Configuration" part of Block 1, while all other xTOF Initial Configurations are part of Block 2? Perhaps there should be a clearer delineation between Block 1 and 2.
5. If MCC2 takes place at days 19-21, I think the appropriate break is indeed at the end of 1.13.
6. Normally I would not want to start Block 2 until Block 1 is completed. For CELIAS that would imply a delay of 2.1 until after MCC2, but that would be a good idea anyway, since there is not much point in having "STOF Intial Configuration" and then turning it off again 2 days later for MCC2. Objections?
7. There is a problem with contingency. As you know normally 100% contingency is allowed for each task, and I will do the same for CELIAS. However, there are only 8 experiment reserved contact hours per day, and with full contingency that makes for only 4 hours of regular

task time. Hence I get in trouble with the days where you request more than 4:00, such as day 24, 25, 27-29. What do you suggest? Can you break down the tasks in smaller chunks ( $\leq 4:00$ ) so that I can reserve contingency on the same day?

That's it. Please review the appended Block sheets, and feel free to correct/modify where needed -- it makes my life a lot easier. I will also append a brief Block sheet explanation at the end. If there are any explanations needed, you can also call at 286-9028.

Thanks a lot,

Piet

\$

# COMMISSIONING PHASE BLOCK SHEET

1. INSTRUMENT AND BLOCK NUMBER: CELIAS Block 1
2. BLOCK IDENTIFICATION: CELIAS Early Switch-on
3. PURPOSE: Early Switch-on and Bake-out to Avoid Contamination

## 4. SUB-BLOCKS:

- | NR.  | IDENTIFICATION                        |
|------|---------------------------------------|
| 1.1  | DPU Turn-on and Check-out             |
| 1.2  | MTOF Turn-on and Check-out            |
| 1.3  | MTOF Cover Release and Bake-out       |
| 1.4  | STOF and SEM Electronics Turn-on      |
| 1.5  | STOF SSD Check-out (Closed)           |
| 1.6  | MTOF Off and STOF Shutter Release     |
| 1.7  | STOF SSD Checkout (Open), MTOF return |
| 1.8  | STOF StartBakeout                     |
| 1.9  | CTOF Switch-on and SSD Check-out      |
| 1.10 | CTOF IFC Check-out                    |
| 1.11 | CTOF Start Bake-out                   |
| 1.12 | STOF End Bakeout                      |
| 1.13 | MTOF End Bake-out                     |
| 1.14 | CTOF End Bake-out                     |
| 1.15 | STOF Begin IFC Checkout               |
| 1.16 | CTOF Initial Configuration            |
| 1.17 | STOF End IFC                          |

## 5. SUB-BLOCKS TABLE: (see Note 2)

NR.	DURATION	PREVIOUS	COMMANDING	TELEMETRY	POINTING
1.1	0:50	N/A	PRO, NRT-d	H	None
1.2	0:40	Nom	PRO, NRT-d	H	None
1.3	1:15	Nom	PRO, NRT-d	H	None
1.4	0:50	Nom	PRO, NRT-d	H	None
1.5	1:00	Nom	PRO, NRT-d	H	None
1.6	0:50	Nom	PRO, NRT-d	H	None
1.7	1:30	Nom	PRO, NRT-d	H	None
1.8	0:30	Nom	PRO, NRT-d	H	None
1.9	1:20	Nom	PRO, NRT-d	H	None
1.10	0:40	Nom	PRO, NRT-d	H	None
1.11	0:15	Nom	PRO, NRT-d	H	None
1.12	0:30	1.8	PRO, NRT-d	H	None
1.13	0:30	1.3	PRO, NRT-d	H	None
1.14	0:30	1.11	PRO, NRT-d	H	None



From: UMDSP::SOHO 4-NOV-1995 17:17:47.02  
To: @FOT,@SOHO\_PS  
CC: @HOVESTADT,@SOWG,SOHO  
Subj: memo on CELIAS - FOT meeting (2 Nov 95)

TO: Keith Walyus (FOT)  
Carline Cazeau (FOT)  
CC: BRETT SAPPER (FOT, please forward, no e-mail address available)  
ROB SNELL (FOT, please forward, no e-mail address available)  
Vicente Domingo (PS)  
Art Poland (PS)  
Bill Worall (Ground systems, please forward, e-mail address unknown)  
Dieter Hovestadt (CELIAS PI)  
Berndt Klecker (Co-I)  
Heiner Gruenwaldt (CTOF Lead Co-I)  
Kay-U Reiche (represents DPU Lead Co-I)  
Fred Ipavich (MTOF Lead Co-I)  
Martin Hilchenbach (STOF Lead Co-I)  
Peter Wurz (Bern Co-I representative)

Dear Keith and Carline,

There have been major discussions within the CELIAS team since our Thursday meeting as to how we can approach the CELIAS turn on situation. To recapitulate the situation, as of the meeting between the FOT (yourselves) and CELIAS (myself, Klecker, and Gruenwaldt):

#### CELIAS COMMISSIONING

All CELIAS commands that involve the DPU software patches, the MTOF and STOF wax motors (cover openings), high voltages for all sensors, and modes that affect high voltages in all sensors are "Disallowed for NRT" and a subset are also Critical commands. Such commands cannot be sent by Near Real Time Commands from the IWS. The designation of "Not Allowed" and "Critical" are in the Project Data Base, and cannot be changed within any short time period, even if that were desirable.

Critical commands can only be sent by FOT procedure.

"Not Allowed" can be sent by RCR during an NRT session, if the predefined command sequence file exists.

"Not Allowed" can be sent by FOT TSTOL procedure, if the procedure file exists.

"Not Allowed" can technically be sent by Delayed command files, but that is usually inappropriate for high voltage commands at least during the initial commissioning.

BINARY commands from NRT can bypass the above checks, however binary commanding is supposed to be disallowed on the CELIAS IWS.

Consequently, CELIAS requires TSTOL and/or RCRs to accomplish commissioning. (Or the option of BINARY commanding would have to be re-considered.)

In order to help decrease the amount of time required to create the CELIAS procedures, the procedures were "pre-written" in TSTOL by the CELIAS representatives before submission to the FOT. The majority of these procedures were submitted by the (admittedly extended) deadline of October 13, 1995 (e-mail by Dan Muhonen to PIs, dated 11 Oct).

There is a difficulty caused by the (1) late (relative to the launch date of 23 Nov) submission of the CELIAS commissioning TSTOL procedures and/or RCRs, (2) the number of such files submitted, and (3) an increased load on the FOT for SVM procedures at this time.

It is well understood that s/c procedures take precedence over experiment procedures, although it is not clear that the FOT had been previously informed by Matra or had been aware as to how extensive this s/c load was going to be at this time before launch. I also imagine the creation of a new test (GSCT#4) affected the time available to the FOT.

At the time of the meeting (2 Nov 95) between the FOT and the CELIAS representatives, none of the CELIAS procedures that had been submitted to the FOT approximately 25 days earlier had been acted upon, and it was felt by the FOT that there would be no time to implement any significant number until about 50 days or so after launch. The FOT indicated that no time would be saved by creating RCRs instead of TSTOLs.

The cover opening for the MTOF on day 10 was of particular concern for

the CELIAS representatives, as this involves critical commands, and a waiver for day 10 opening had previously been granted based on instrument well-being concerns. Therefore waiting 50 days after launch before being commissioning was not favorably received.

However, the CELIAS representatives agreed to write new procedures, in particular for the high voltage turn on sequences (required after day 22), in a parameter input form, instead of hard-coded inputs. This would cut down dramatically the required number of procedures.

The FOT will try to do experiment commissioning procedures if there is time, but no guarantees were, or could be, given.

We were further asked by the FOT to submit a "what is needed by what day" list of procedures, or at least how many procedures are involved. We estimated at the meeting that the total number could be decreased to about 50, with possibly 9-12 required by day 10. A better estimate is given at the bottom of this message.

The attached list is based on the discussions (sometimes by phone or fax) by Galvin, Hovestadt, Klecker, Hilchenbach, Gruenwaldt, Ipavich. We realize the generation of this list by the CELIAS team does not guarantee implementation by the FOT.

#### HEATERS.

During the FOT-CELIAS meeting, a separate matter that concerns instrument operations was discussed. This regards the replacement (aka "non-ops", aka "compensation") heaters. There are five separate units in the CELIAS experiment that have heaters. The DPU and STOF-Electronics box are collectively controlled thermally, and (unfortunately) the same commands are used to turn ON or OFF their separate heaters (CELIAS Heater A, and redundant Heater B). The CTOF, MTOF, and STOF are individually controlled, and have separate heater commands CELIAS Heater 1, 2, 3, respectively, plus a Heater 4 command that is the redundant heater command for all three.

The current procedures for turning the CELIAS experiment heaters ON/OFF are based solely on the condition of the DPU. This is inappropriate. Obviously the DPU needs to be on before any sensor is turned on, but the sensor ON/OFF status is otherwise independent. The FOT needs to take into account that the sensor turn on will be staggered. The DPU and MTOF are to be turned on on day 10. The DPU heater must be turned off once the DPU is on. (MTOF heater will be turned off for cover release, but then on again for bakeout.) Since the STOF-E heater is linked to the DPU heater by a common command, STOF-E must also be turned on, on day 10, because it cannot be left off if its heater is off. CTOF will not turn on until day 15, so its heater must remain on. Etc., Etc.

We also have permission to have the heaters on while sensors are on during the respective sensor BAKEOUT. So initially there will be times when both the sensor and its heater will be on. (Except only the STOF heater, and not the STOF-E heater would be on during STOF bakeout. Etc.)

In other words, the heater situation should be scripted to minimize confusion.

The FOT should be aware that the sensors ON/OFF state is controlled by CELIAS Block commands, which in fact are allowed through NRT, Delayed, TSTOL, etc. There are also conditions under the control of the DPU in which sensors may be powered off automatically (for example, this is an optional ESR response, and may also occur if the DPU watch dog is activated.)

This issue has been brought up (by me) more than once at SOWG meetings, and I have been repeatedly assured that the heater control, which involves s/c commands, will be handled appropriately without any required intervention by the experimenter. I am simply re-iterating this matter here, since it was not apparent that the FOT procedure used for preparation for experiment turn on recognizes this fact.

Best regards,

Toni Galvin

\*\*\*\*\*

For day 10 after launch, the following CELIAS procedures will be required (this list was submitted to the FOT last week and is included for completeness - all procedures for day 10 have been submitted to the FOT):

- |      |                   |   |
|------|-------------------|---|
| (1)  | f_fl_cls_on.prc   | CELIAS ON, PRIMARY (some corrections from f_fl_pwrn_pr.prc) |
| (2)  | f_fl_pwrn_pr.prc  | CELIAS OFF, PRIMARY (for contingency; this proc exists)     |
| (3)  | f_fl_d_lud_on.prc | DPU latch up det on   |
| (4)  | f_fl_d_patch1.prc | DPU s/w patch 1   |
| (5)  | f_fl_d_patch2.prc | DPU s/w patch 2   |
| (6)  | f_fl_d_patch3.prc | DPU s/w patch 3   |
| (7)  | f_fl_d_patch4.prc | DPU s/w patch 4   |
| (8)  | f_fl_m_modstb.prc | MTOF standby mode   |
| (9)  | f_fl_m_modifc.prc | MTOF ifc mode   |
| (10) | f_fl_m_modoff.prc | MTOF off mode (for contingency)                             |
| (11) | f_fl_mp_hv0.prc   | MTOF HV off (for safety)                                    |
| (12) | f_fl_m_wmt120.prc | MTOF wax motor 2min   |
| (13) | f_fl_m_wmt180.prc | MTOF wax motor 3min   |
| (14) | f_fl_m_wmt240.prc | MTOF wax motor 4min   |
| (15) | f_fl_m_wmt300.prc | MTOF wax motor 5min   |
| (16) | f_fl_m_wmtvar.prc | MTOF wax motor parameter time                               |
| (17) | f_fl_standby      | STOF standby  |
| (18) | f_fl_stofman      | STOF manual   |
| (19) | f_fl_sem_on       | SEM on  |

For day 14 after launch, the following additional procedures will be needed:

- |         |                   |  |
|---------|-------------------|--|
| (20)    | f_fl_ssd_l202.prc | STOF solid state detector limit=202 (this proc was submitted to the FOT last month)  |
| (21)    | f_fl_ssd_on.prc   | STOF SSD bias enable / ON (this proc was submitted to the FOT last month)  |
| (22)    | f_fl_ssd_s202.prc | STOF SSD level = 202 (this proc was submitted to the FOT last month)   |
| (23)    | f_fl_stim_h.prc   | STOF/HSTOF TOF Stimulation ON (this proc was submitted to the FOT last month)  |
| ** (24) | f_fl_stof_wax.prc | STOF wax motor operation *** this procedure is a revised version of the earlier Oct submission, will replace the earlier submission, and is attached at the end of a separate message. *** |

For day 15 after launch, the following additional procedures will be needed:

- |         |                   |  |
|---------|-------------------|--|
| ** (25) | f_fl_ct_pvvl6.prc | CTOF vvps limit by parameter ** new procedure attached at end of a separate message ** |
| ** (26) | f_fl_ct_phvl1.prc | CTOF hvps limit by parameter ** new procedure attached at end a separate message **    |

For day 22 after launch, the following additional procedures will be needed:

- |         |                   |  |
|---------|-------------------|--|
| ** (27) | f_fl_m_mode.prc   | MTOF mode by parameter ** new procedure attached at end of a separate message **                             |
| ** (28) | f_fl_m_preamp.prc | MTOF preamp ON/OFF by parameter ** new procedure attached at end of a separate message **                    |
| ** (29) | f_fl_p_thresh.prc | MTOF PM threshold selection by parameter ** new procedure attached at end of a separate message **           |
| * (30)  | f_fl_m_mcp70.prc  | MTOF combined mcps procedure to set delta/limit 70. * NOT YET WRITTEN *                                      |
| * (31)  | f_fl_m_enable.prc | MTOF High voltage enable by parameter * NOT YET WRITTEN *  |
| * (32)  | f_fl_m_psgen.prc  | MTOF High voltage power supply, level, limit, delta by parameter (Power Supply GENERIC). * NOT YET WRITTEN * |

This will take us up to day 24, as regards procedures. Until the "parameter" procedures are all accounted for, I cannot make a definitive count, but the estimated count for up to day 33 is as follows

	UP TO DAY 24	ADDITIONAL UP TO DAY 33	TOTAL by SENSOR UNIT
DPU	7	0 - 1	7 or 8
CTOF	2	7	9
MTOF	15	0 - 1	15 or 16
STOF	8	21	29
<hr/>			
TOTAL			
CELIAS	32	28 or 30	60 or 62

STOF has an additional request for another 10 procedures to be used for commissioning but sometime after day 33. I am requesting clarification from MPE as to when these would be required.

# **SOHO PAYLOAD COMMISSIONING**

## **CELIAS TIMELINE FOR THE FIRST 180 DAYS**

**Submittal version 4.0**

**21-JULY-1995**

**(CELIAS REPRESENTATIVE: A.B. GALVIN)**

## Revisions

Version	Date	Change
2.0	19.Aug.94	First submittal version.
3.0	29.Nov.94	Changes to CTOF timeline based on discussion with H. Grünwaldt in 9/94.  Day 4: CTOF turn on either in standby or manual. Day 4: CTOF order for IFC and SSD tests reversed.
		Day 4-12: CTOF bakeout increased from 2 days to 7 days. CTOF SSDs on for bakeout. All subsequent CTOF procedures delayed accordingly (+5 days).
		Day 12-14: CTOF MCP turn on changed to last 3 days.
		Day 12-180: Daily CTOF IFC commanding.
		Day 14: CTOF E/Q tests moved from day 9, and duration increased from 3 to 6 hours.
		Day 15: CTOF PAPS turn on moved to day 15 from day 10.
4.0	21.Jul.95	Experiment commissioning will not be allowed before day 14, because of s/c operations requirements. MTOF exempted to start on day 10. Timeline restructured accordingly.
		Changes to MTOF timeline based on discussion with F.M. Ipavich (4/95). Further revisions after discussion with FMI (7/95).
		Timelines for CTOF and STOF unchanged except shifted to new start date (day 14), based on discussion with F. Bürgi (5/95).

### notes:

The scripts for individual procedures should be considered as top level information on the type of commands involved. Their primary purpose is to help make a better estimate on the "when" and "how long" required to perform a particular procedure. The detailed procedure scripts are under development.

## Abbreviated TIMELINE:

- DAY 00 + 1H to DAY 04:     Lift Off and Spacecraft Operations.
- COMMENCE CELIAS THERMAL CONTROL.**  
Thermal monitoring of CELIAS units ASAP. Non-ops heaters for CELIAS units should be turned on as soon as possible, but subject to temperature limits constraints.
- DAY 04 - 13:                    Spacecraft Operations only, except for some exemptions for specific experiments. Continue CELIAS thermal control.
- DAY 10:                         **CELIAS DPU TURN ON, CHECKOUT, and S/W CONFIGURATION.**  
CELIAS DPU turn on and checkout for the first time. Implement DPU flight configuration (including any software patches).
- MTOF TURN ON, CHECKOUT, and COVER RELEASE.**  
MTOF turn on for the first time.  
MTOF initial checkout (IFC TEST).  
Preparation of CTOF, STOF, and MTOF for MTOF cover release.  
MTOF cover release.  
CELIAS reconfiguration after MTOF cover release (DPU and MTOF commands, if needed).  
Commence MTOF bakeout for at least 5 days (MTOF in Standby, non-ops heater on).
- DAY 14:                         **STOF TURN ON, CHECKOUT, and SHUTTER RELEASE.**  
STOF turn on for the first time.  
STOF initial checkout (SSD TEST); SSDs on.  
STOF initial checkout (IFC TEST).  
Preparation of CTOF, MTOF, and STOF for STOF shutter release.  
STOF shutter release.  
STOF reconfiguration after STOF shutter release.  
Commence STOF bakeout with SSDs on (at least 2 days).  
MTOF reconfiguration after STOF shutter release.
- DAY 14 or 15:                 **CTOF TURN ON AND CHECKOUT.**  
CTOF turn on for the first time.  
CTOF initial checkout (SSD TEST); SSDs on.  
CTOF initial checkout (IFC TEST).  
Commence CTOF bakeout with SSDs on (about one week).

**DAY 16:** **END BAKEOUT FOR MTOF and STOF.**  
 Turn off MTOF non-ops heater.  
 Turn off STOF non-ops heaters.

**Day 16 or 17:** **SET STOF, MTOF INITIAL CONFIGURATION.**  
 Configure various MTOF rate, PHA, etc. definitions.  
 Configure various STOF rate, PHA, etc. definitions.

**DAY 17:** **MTOF HIGH VOLTAGES - MCPs.**  
 MTOF MAIN Start MCP initial turn on (up to 750v/plate, in six steps: 0, 60, 90, 110, 120, 125. Wait at least 15 minutes between step commands for evaluation).  
 MTOF MAIN Ion MCP initial turn on (up to 750v/plate, in six steps, with at least 15 minutes between step commands).  
 MTOF MAIN Neutral MCP initial turn on (up to 750v/plate, in six steps, with at least 15 minutes between step commands).  
 MTOF PM MCP initial turn on (up to 750v/plate, in six steps, with at least 15 minutes between step commands).

**SEM INITIAL TURN ON.**

**STOF HIGH VOLTAGES - MCPs.**  
 STOF MCP1 initial turn on.  
 STOF MCP2 initial turn on.

**DAY 18:** **MTOF HIGH VOLTAGES - MCPs and PM E/Q.**  
 MTOF MAIN & PM MCPs bias increase in six (or less) steps, at least 30 minutes between steps.  
 Bring to Nominal Operational Levels:  
 Start MCP to 145,  
 Neutral MCP to 140,  
 Ion MCP to 155, and  
 PM MCP to 140.  
 Commands for Start, Ion, Neutral and PM MCPs can run concurrent.  
 MTOF PM E/Q initial turn on (3 max levels: 1kV, 2kV, and 3kV limits). Time between new max level commands at least 15 minutes.

**STOF HIGH VOLTAGES - MCPs.**  
 STOF MCP1 bias increase.  
 STOF MCP2 bias increase.

**DAY 19:** **END CTOF BAKEOUT.**  
 Turn off CTOF non-ops heater.

**PRE-MANUEVER PREPARATION.**  
 CTOF preparation for MCC2 (HV-off, standby).  
 MTOF preparation for MCC2 (HV-off, standby).  
 STOF & SEM preparation for MCC2 (HV-off, standby).



DAY 20-22:	<b>S/C MANUEVERS - MCC2.</b>
DAY 22 and/or 23:	<b>POST-MCC2 MANUEVER RECONFIGURATION.</b> Reconfigure MTOF (turn on MCPs as on Day 17 and PM E/Q as on Day 18). Reconfigure STOF/SEM. Reconfigure CTOF.  <b>CTOF HIGH VOLTAGE - MCPs.</b> CTOF MCPs initial turn on.
DAY 23 or 24:	<b>CONTINUE POST-MCC2 MANUEVER RECONFIGURATION.</b> MTOF MCPs reconfiguration continued, as on Day 18. STOF MCPs reconfiguration continued.
DAY 24	<b>CTOF HIGH VOLTAGES - MCPs, E/Q.</b> CTOF MCPs bias increased. CTOF E/Q initial turn on.  <b>CTOF PERMANENT COMMANDS.</b> CTOF daily IFC test (for life of mission).  <b>STOF HIGH VOLTAGES - HSTOF E/Q, STOF E/Q.</b> HSTOF E/Q initial turn on. STOF E/Q initial turn on.  <b>MTOF HIGH VOLTAGES - HPS, PM.</b> MTOF Hyperbola initial turn on (level 0, 50, 80 with 30 minutes between each level increase). MTOF PM E/Q limit increased to 4 kV.
DAY 25:	<b>MTOF HIGH VOLTAGES - WAVE E/Q, HPS.</b> MTOF MAIN WAVE E/Q initial turn on (to 4 kV). MTOF HPS voltage increase (at least 30 minutes after WAVE turn on, set HPS to level 90. Wait at least 30 more minutes, set HPS to 100).  <b>CTOF HIGH VOLTAGES - PAPS.</b> CTOF PAPS initial turn on.
DAY 26:	<b>MTOF HIGH VOLTAGES - WAVE E/Q, HPS.</b> MTOF MAIN WAVE E/Q increase (to 6kV). MTOF HPS voltage increase (at least 30 minutes after WAVE increase, set HPS to level 110. Wait at least another 30 minutes, set HPS to level 120).  <b>CTOF HIGH VOLTAGES - PAPS.</b> CTOF PAPS voltage increase.

DAY 27: **MTOF HIGH VOLTAGES - WAVE E/Q, HPS.**  
MTOF MAIN WAVE E/Q increase (to 8 kV).  
MTOF HPS voltage increase (at least 30 minutes after  
WAVE increase, set HPS to level 130).

**CTOF HIGH VOLTAGES - PAPS.**  
CTOF PAPS voltage increase.

DAY 28: **MTOF HIGH VOLTAGES - WAVE E/Q, HPS.**  
MTOF MAIN WAVE E/Q increase (to 10 kV).  
MTOF HPS voltage increase (at least 30 minutes after  
WAVE increase, set HPS to level 140).

**CTOF HIGH VOLTAGES - PAPS.**  
CTOF PAPS voltage increase.

DAY 29: **MTOF HIGH VOLTAGES - WAVE E/Q, HPS.**  
MTOF WAVE set to full operational voltage (limit to  
max kV).  
MTOF HPS voltage increase (at least 30 minutes after  
WAVE increase, set HPS to level 150.  
After at least another 30 minute wait, set  
HPS to level 160).

**CTOF HIGH VOLTAGES - PAPS.**  
CTOF PAPS voltage increase.

DAY 30: **MTOF HIGH VOLTAGES - Vf, HPS.**  
MTOF MAIN Vf initial turn on (limit  $\pm 1$  kV).  
MTOF HPS voltage increase (at least 30 minutes after  
Vf turn on, set HPS to level 170).

DAY 50: **MTOF HIGH VOLTAGES - Vf, HPS.**  
MTOF Vf and/or HPS: Possible voltage increase,  
at the discretion of the experimenter.

DAY 59: **CELIAS CONFIGURATION FOR S/C HGA OUT  
OF FOV**

DAY 60: **S/C HGA OUT OF FOV. NO P/L COMMANDING.**

DAY 62: **CELIAS RECOVERY PROCEDURES.**  
CTOF HV RECOVERY.  
MTOF HV RECOVERY - DAY 1.  
STOF HV RECOVERY.

DAY 63: **CELIAS RECOVERY PROCEDURES CONTINUE.**  
MTOF HV RECOVERY - DAY 2.

DAY 64: **CELIAS RECOVERY PROCEDURES CONTINUE.**  
MTOF HV RECOVERY - DAY 3.

DAY 70:	<b>MTOF HIGH VOLTAGES - Vf, HPS.</b> MTOF Vf and/or HPS: Possible voltage increase, at the discretion of the experimenter.
DAY 75:	<b>CELIAS CONFIGURATION FOR S/C MANUEVERS - TBD</b>
DAY 76:	<b>OFF-LOADING OF REACTION WHEELS - P/L in STANDBY.</b>
DAY 77:	<b>CELIAS RECOVERY PROCEDURES.</b> CTOF HV RECOVERY. MTOF HV RECOVERY - DAY 1. STOF HV RECOVERY.
DAY 78	<b>CELIAS RECOVERY PROCEDURES CONTINUE.</b> MTOF HV RECOVERY - DAY 2.
DAY 79	<b>CELIAS RECOVERY PROCEDURES CONTINUE.</b> MTOF HV RECOVERY - DAY 3.
DAY 90:	<b>MTOF HIGH VOLTAGES - Vf, HPS.</b> MTOF Vf and/or HPS: Possible voltage increase, at the discretion of the experimenter.
DAY 110:	<b>MTOF HIGH VOLTAGES - Vf, HPS.</b> MTOF Vf and/or HPS: Possible voltage increase, at the discretion of the experimenter.
DAY 114:	<b>CELIAS PREPARATION FOR HOI MANUEVERS.</b> CTOF preparation for HOI (HV-off, standby) MTOF preparation for HOI (HV-off, standby) STOF & SEM preparation for HOI (HV-off, standby)
DAY 115-119:	<b>S/C MANUEVERS for HOI</b>
DAY 120:	<b>CELIAS RECONFIGURATION AFTER HOI.</b> CTOF reconfiguration after HOI MTOF reconfiguration after HOI STOF & SEM reconfiguration after HOI
DAY 121:	<b>CELIAS RECONFIGURATION AFTER HOI CONTINUES</b> MTOF High Voltage turn on continued.
DAY 122:	<b>CELIAS RECONFIGURATION AFTER HOI CONTINUES</b> MTOF High Voltage turn on continued.
DAY > 120:	<b>S/C IN HOP: THRUSTER OPERATIONS</b>

From: 16136::CST "CHRIS ST.CYR,GSFC/682/ATSC/SOHO,301/286-8968" 30-NO  
To: UMDSP::GALVIN  
CC:  
Subj: Can you help me out here Toni? We need a CELIAS response. Thanks!

TO: D. Muhonen, B. Worrall  
FROM: C. St.Cyr  
DATE: 30 Nov 94  
RE: Critical Commands for Instruments  
CC: SOWG

I have gathered information from the experimenters about the commands which are presently marked as "critical" or "hazardous" in the SDB. The responses varied from instrument-to-instrument, and this memo will document each case.

There are some instrument commands in the SDB marked as "critical" or "danger", and this designation will be carried through to NASA's PDB unless the PI team notifies the FOT that the flag should be removed for flight. Nominally, when a "critical" command appears in a TSTOL Procedure or is typed in at the POCC console, then a second "SEND" or "ALLOW" command is required by the FOT to execute transmission to the spacecraft.

The NASA PDB has an additional field called "Not Allowed for NRT Commanding". At this time, only those commands in the SDB which were marked "critical" have this additional flag set. The purpose of this field was to provide another level of security to the PI teams in case there were any OBDH Block Commands which they did not want declared as "critical", but which they also did not want issued from the EOF. Recall that only OBDH Block Commands can be sent from the EOF.

What happens if one of these "Not Allowed for NRT Commanding" OBDH Block Commands is sent from an IWS in the EOF? We assume that the IWS is authorized to command that instrument, that the syntax is correct, etc. If the command is sent in mnemonic form, it will be rejected by the Command Management System (CMS) in the SMOCC. No further commanding of that instrument can take place from the EOF until the instrumenter acknowledges the error.

But what if such a command is sent in Binary format? There is really no way for any element in the ground system to recognize and stop such a command. We have always stated that Binary commanding put the burden of responsibility completely on the PI team, and we now know how each team plans to provide the insurance to prevent that. Below are the list of commands for each instrument that are currently marked as "critical" and the response of each PI team to this question:

---CDS---

CB3RESET	*F Soft reset CDHS	BK
CBEFILE	Filament Pw enable (isola relay)	BK
CBEFILN	Filament on	BK
CBEGHV1N	GIS HV1 on	BK
CBEGHV2N	GIS HV2 on	BK
CBEGHV3N	GIS HV3 on	BK
CBEGHV4N	GIS HV4 on	BK
CBEGHVE	GIS HV enable (isolation relay)	BK
CBEHTRSN	Op Heaters on	BK
CBEVHTRN	VDS Heater on	BK

CBEVHVN	VDS HV power supply on	BK
CBGHV1E	HV1 enable	BK
CBGHV1V	HV1 set	BK
CBGHV2E	HV2 enable	BK
CBGHV2V	HV2 set	BK
CBGHV3E	HV3 enable	BK
CBGHV3V	HV3 set	BK
CBGHV4E	HV4 enable	BK
CBGHV4V	HV4 set	BK
CBGLRB	Rebuild lookup table	BK
CBGMCP1L	Limit for HV 1 cur	BK
CBGMCP2L	Limit for HV 2 cur	BK
CBGMCP3L	Limit for HV 3 cur	BK
CBGMCP4L	Limit for HV 4 cur	BK
CBGRESET	Reset everything	BK
CBGSFTRS	Soft proc. reset	BK
CBMDGOS	Door GIS open( solenoid )	BK
CBMDVOS	Door VDS open ( solenoid )	BK
CBV	Send any command	BK

These commands were flagged for instrument-level and spacecraft-level AIV activities. Many of them will be removed from the "critical" list. During NRT commanding, mnemonics which are sent by the IWS operator are checked against a CDS-specific database on the IWS, and any commands which the PI team chooses to leave as "critical" after AIV will be flagged so that the operator has to perform a "safety" step. For protection against one of these commands being produced in a Binary load, any hazardous commands are flagged during the generation of the load. (Jeff Payne)

#### ---LASCO/EIT---

EBEDOP	EIT Aperture Door OPEN	BK
EBEDPA	EIT Door PA FIRE	BK
EBEVPA	EIT Depres Valve PA FIRE	BK
LB1DOP	C1 Aperture Door OPEN	BK
LB1DPA	C1 Door PA FIRE	BK
LB2DOP	C2 Aperture Door OPEN	BK
LB2DPA	C2 Door PA FIRE	BK
LB3DOP	C3 Aperture Door OPEN	BK
LB3DPA	C3 Door PA FIRE	BK
LBCLPA	COB Launch Lock PA FIRE	BK
LBPXON	Prom Card Power ON, REBOOT	BK
LBSBOOT	PCE Processor BOOT	BK

Only the Paraffin Actuator commands will remain marked as "critical" for flight. Those commands will be double-password protected for use as mnemonics, and they will be excluded from the Binary load generation software. (Russ Howard)

#### ---CELIAS---

FBDBRK	Break.	BK
FBDCONT	Continue.	BK
FBDFM	Fill Memory.	BK
FBDMM	Modify Memory.	BK
FBDMPB	Modify Port Bytes.	BK
FBDMPW	Modify Port Word.	BK
FBDRUN	Run From	BK
FCPWRAN	DPU main power	DHPC

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 30-NOV-1994 15:41:47.83  
To: @TUB  
CC: @BUERGI,MPE::BEK,GALVIN  
Subj: critical commands

Dear Kay-U,

I need to know whether or not you want any dpu related commands listed as critical for SOHO. Right now, the only commands listed as critical have to do with sensors -- on/off, high voltages, etc. I sent a list of the Matra data base commands back to TUB with Thomas. (This is the same as an earlier e-mail from a few months ago, plus I will send a similar one after this memo.) For example, should things like FBDMM = modify memory be a critical command? Because right now it is not on my list. Or "modify port byte", "modify register", etc?

I need to get this done this week, as I am leaving for Toulouse on Sunday. So the default will be my existing list:

FCPWRAN  
FCPWRAR  
FCPWRBN  
FCPWRBR  
FCMPBTN  
FCMPBTR

Since these are all ooc commands, I do not think we could send them even if we wanted to.

Is there any documentation on what the CELIAS commands are, and what they do, and what the parameter input should be? All I have are the Matra data base command/telemetry list. It would certainly make my job easier if I could get a copy of the DPU command definition document, if such exists.

best regards, Toni

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 4-DEC-1994 14:13:33.32  
To: SDAC::CST  
CC: @CRIT,GALVIN  
Subj: celias critical command list for flight

To : Chris StCyr  
CC : Buergi, Hovestadt, Hilchenbach, Ipavich, Bedini, Gruenwaldt, Reiche

Dear Chris,

Here is the CELIAS critical command list for flight operations

best regards,  
Toni Galvin

CELIAS Critical Commands for Flight

Sensor TC

DPU FCPWRAN \*same as Sep 94 Toulouse list\*  
FCPWRAR  
FCPWRBN  
FCPWRBR  
FCMPBTN  
FCMPBTR

CTOF FBCMOD2 \*same as Sep 94 Toulouse list\*  
FMCMOD2I  
FBCMOD3  
FBCMOD3I  
FBCMOD4  
FBCMOD5  
FBCMOD6  
FBCENA  
FBCLIMHV  
FBCLIMMC  
FBCLIMVV  
FBCHVPS  
FBCMCPs  
FBCVVPS  
FBCCTRL

MTOF FBMMOD5 \*slightly revised from Sep 94 Toulouse list \*  
FBMMOD6 \* as there are fewer MTOF critical commands \*  
FBMOPT1  
FBMOPT2  
FBMLIMPM  
FBMLIMPE  
FBMLIMWE  
FBMLIMVF  
FBMLIMSM  
FBMLIMNM  
FBMLIMIM  
FBMLIMHV  
FBMENA  
FBMENAI

FBMPM  
FBMPE  
FBMWE  
FBMVF  
FBMSM  
FBMNM  
FBMIM  
FBMHV

STOF

FBSMOD2  
FBSMOD2I  
FBSMOD3  
FBSMOD3I  
FBSMOD4  
FBSMOD5  
FBSPWR  
FBSEUVON  
FBSOPT1  
FBSOPT2  
FBSLIMSL  
FBSLIMSH  
FBSLIMHD  
FBSLIMM1  
FBSLIMM2  
FBSLIMBI  
FBSENA  
FBSENAHD  
FBSENASS  
FBSENAMB  
FBSENASB  
FBSHDON  
FBSS1ON  
FBSS2ON  
FB SMBON  
FBSSBON  
FBSSWV  
FB SHDV  
FB SM1V  
FB SM2V

\*same as Sep 94 Toulouse list\*



From: UMDSP::SQHO 28-SEP-1995 16:40:15.29  
To: @CAZEAU  
CC: @HOVESTADT,SOHO  
Subj: request for PDB revisions

Dear Carline,

Kay Reiche has reviewed the command data base for CELIAS/DPU, and has found 13 command mnemonics that have an erroneous binary translation.

I realize that you have not yet set up procedures for making changes to the PDB, and that Version 9 has not yet settled in. But once revisions to what will become Version 10 begin, please make the following corrections.

What is given below is (1) the current data base with the WRONG values  
(2) the revised data base with the CORRECT values

Please note that 7 of the commands that require revision are designated as "CRITICAL" in the database, and therefore we are most anxious to have the mnemonic TC available. Once you have determined the procedure for making changes in the PDB, I would appreciate an estimate on when the revisions will be implemented.

Best regards,

Toni Galvin

P.S. I am working under the assumption that Matra has transferred responsibility for future data base changes to the FOT. If Matra needs to be contacted regarding these changes, please let me know.

=====  
(1) All of the following commands are currently wrong in the database  
(the first words (0100, 0200...) must be swapped (0001, 0002...)):  
=====

mnemo	description	parameters (this version is wrong)
fbdm	modify memory	<11> 0100 .... (28 * xxxx)
fbdfm	fill memory	<11> 0200 xxxx xxxx xxxx xxxx
fbddpb	display port byte	<11> 0300 xxxx
fbdmdb	modify port byte	<11> 0400 xxxx 0000 0000 xxxx
fbddpw	display port word	<11> 0500 xxxx
fbdmwp	modify port word	<11> 0600 xxxx 0000 0000 xxxx
fbddr	display registers	<11> 0700
fbdmr	modify register	<11> 08xx 0000 0000 0000 xxxx
fbddbp	display breakpoints	<11> 0900
fbdmdbp	modify breakpoint	<11> 0axx xxxx xxxx
fbdrun	run from	<11> 0b00 xxxx xxxx
fbdbrk	break	<11> 0c00
fbdcnt	continue	<11> 0d00

=====  
(2) The requested revisions  
=====

mnemo	description	parameters (this version is correct)
fbdm	modify memory	<11> 0001 .... (28 * xxxx)
fbdfm	fill memory	<11> 0002 xxxx xxxx xxxx xxxx
fbddpb	display port byte	<11> 0003 xxxx
fbdmdb	modify port byte	<11> 0004 xxxx 0000 0000 xxxx
fbddpw	display port word	<11> 0005 xxxx
fbdmwp	modify port word	<11> 0006 xxxx 0000 0000 xxxx
fbddr	display registers	<11> 0007
fbdmr	modify register	<11> xx08 0000 0000 0000 xxxx
fbddbp	display breakpoints	<11> 0009
fbdmdbp	modify breakpoint	<11> xx0a xxxx xxxx
fbdrun	run from	<11> 000b xxxx xxxx
fbdbrk	break	<11> 000c
fbdcnt	continue	<11> 000d

=====

From: UMDSP::SOHO 18-OCT-1995 16:31:55.15  
To: @CAZEAU  
CC: @HOVESTADT, @BORNEMANN, IPAVICH,SOHO  
Subj: another celias database change request

Dear Carline,

I asked my colleagues to make another check on the command data base for CELIAS, and my STOF colleagues may have found another error in the command base, although I am not sure if they really are looking at version 9 or not. I am attaching the e-mail I received today from Walter Bornemann, and at some point I hope the FOT can check it out.

Will the corrections that are so sorely needed in the DPU commands be implemented in time for the GSCT#4? It will affect what needs to be done via binary vs. mnemonic.

I have additional delays from the CTOF Lead Co-I concerning his procedures. I suspect it will be a few more days.

best regards, Toni Galvin

p.s. Please give my continuous apologies to Brett

p.s.s I will be out of town all next week, which hopefully will not matter.

\*\*\*\*\* attached message regarding STOF command \*\*\*\*\*

Dear Toni,

thanks for your prompt response concerning the Goddard database. During the check of the Matra database version 9 we found out, that they have forgotten to change one of the STOF commands. The command named FBSSMPL has too few parameters (4 bytes instead of 6).

Correction for the FBSSMPL command:

old				new			
CK FBSSMPL	1	1054	FFFF	CK FBSSMPL	1	1054	FFFF
CK FBSSMPL	2	0000	0000	CK FBSSMPL	2	0000	0000
CK FBSSMPL	3	0000	0000	CK FBSSMPL	3	0000	0000
				CK FBSSMPL	4	0000	0000

(part of the SOHOCK.PDB file)

Please can you give the corrected FBSSMPL command to the FOT team to implement this together with the database 9. Can you additionally check whether all changes in the database 9 are implemented by the FOT (including the changes written by hand at KSC, e.g. STOF sweep housekeeping calibration curve).

bye,Walter



(Viewgraphs presented by Chris St.Cyr to the SOWG)

## Simulation Philosophy

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- o Two Parallel Goals of First SOHO Simulation
  - Functional Test of EOF.
  - Science Planning Simulation.
- o Functional Test Matrices
- o Discrepancy Reports.
- o Project Scientists' Discussions with Each PI Team.

## Overview of PI Team Functional Testing

-----

- o Previous Months (February - October)
  - One Week Individual Testing of Instrument Workstations (IWS).
- o Previous Week (7 Nov - 11 Nov)
  - Eight (8) IWS Configured.
- o Monday (14 Nov)
  - Four (4) Additional IWS Configured
  - Medium Rate Telemetry to All IWS (8 hours)
  - One MDI-M (5 minutes) session
- o Tuesday (15 Nov)
  - Medium Rate Telemetry (8 hours)
  - Two Near-Real-Time (NRT) Commanding (each 1.5 hours) Individual IWS Sessions
  - Two MDI-M (5 minutes) sessions
- o Wednesday (16 Nov)
  - Low Rate Telemetry (15 minutes)
  - Medium Rate Telemetry (8 hours + evening)
  - Two Near-Real-time (NRT) Commanding (each 1.5 hours) Individual and Group Sessions.
  - One MDI-M (1 hour) session
- o Thursday (17 Nov)
  - Low Rate Telemetry (15 minutes)
  - Medium Rate Telemetry (8 hours + evening)
  - Two Near-Real-time (NRT) Commanding (each 2 hours) Group IWS Sessions
  - One MDI-M (1 hour) session
- o Friday (18 Nov)
  - Low Rate Telemetry (15 minutes)
  - Medium Rate Telemetry (45 minutes)
  - One Near-Real-time (NRT) Commanding (45 minutes) Group IWS Session

## Personnel

-----

Project Scientists' Office	9
ECS Developers	6
CDS	6
CELIAS	3
CEPAC	1
EIT	3
GOLF	3
LASCO	5
MDI	5
SUMER	6
SWAN	5
UVCS	10
Total	> 60

— includes Galvin

#### Functional Test Successes

-----

- o Telemetry Distribution
  - Real-time, Quick-look, Archived, and MDI-M
- o Commanding
  - Delayed Commands (VIRGO, EIT do not participate)
  - Near-Real-Time (NRT) (CEPAC, VIRGO, EIT do not participate)
  - Background Queue
    - CDS, LASCO, SUMER, UVCS participated
    - MDI and GOLF have unresolved CMS questions
- o Ancillary Data Products
  - Summary Data
    - Provided by CDS, EIT, MDI, SUMER, UVCS
    - LASCO did not submit
  - Input to Activity Plan
    - CDS, EIT, LASCO, MDI, SUMER, UVCS
  - As-Run File
    - Preliminary input provided by CDS and UVCS
    - EIT, LASCO, MDI, SUMER did not submit
- o Other EOF Functions
  - E-mail
  - NASA Science Internet
  - Network Time Services
  - Informational Messages

#### Unexpected Results

-----

- o Ground system performed as specified when NRT commanding rate was much higher than anticipated.
- o Ground system performed well with 1 hour of MDI-M.

#### Discrepancies

-----

- o Telemetry

- Only SWAN, GOLF, MDI have valid POCC displays.
- Low Rate EXPHK packet had 12 byte offset.
- Transmission of archived telemetry to IAC showed time-out error, but data appeared correct.
- Automated distribution of Q/L files to IWS produced some duplicate copies.
- VIRGO Q/L data not available.
- ECS file-naming convention will not work for times when fill packets are present.
- MDI-M sessions were 5 minutes but were advertised to be 15 minutes.
- UVCS final packet in Q/L had extraneous data.
- Time offset initially between HK and SC packets.
- CDS reported 4 minute 'hiccup' in medium rate.

o Commanding:

- Delays in NRT due to POCC retransmission logic.
- Vague Error Messages from CMS in both Validation Reports and during NRT.
- Incorrect SUMER (2), LASCO (1), CELIAS (1) commands passed through ground system.
- CELIAS exceeded maximum size of Delayed Command File.
- GOLF and MDI have unresolved CMS failures in Background Queue commanding.
- UVCS reported non-reproducible RCR failure.

o Other:

- Several unexplained crashes of IWS, ECS, CMS, POCC computer systems.

## Future Testing Required

-----

- o Telemetry Submodes (Flexible Bit Rate) not tested.
- o Some NRT functionality was partially tested:
  - Critical command mnemonics tested only by CELIAS.
  - Only UVCS used Remote Command Request (RCR).
  - Only MDI, SWAN, UVCS used Remote Procedure Request mechanism (RPR).
  - Only CDS and UVCS used Reserved Time.
  - ECS Command Status Display not implemented by CELIAS, EIT, SUMER, UVCS.
- o NRT Priority Levels not tested.
- o NRT Channel needs to be optimized.
- o Some Ancillary Data Products not available.
  - Orbit & Attitude, Command History File, Time Correlation File, SOHO Daily Report.
- o Activity Plan requires further work.
- o Use of 'overflow' area.
- o Electronic Security measures not implemented.

From: MX%"vdomingo@so.estec.esa.nl" 2-FEB-1995 17:15:52.78  
To: MX%"cdp@astrol.bnsc.rl.ac.uk",MX%"galvin@umdsp.umd.edu",MX%"ifkki.dnet!m  
CC:  
Subj: SOWG meeting

Return-Path: <vdomingo@so.estec.esa.nl>  
Received: from dove (dove.so.estec.esa.nl) by UMDSP.UMD.EDU (MX V4.0-1 VAX)  
with SMTP; Thu, 02 Feb 1995 17:15:45 EST  
Received: from lynx by dove with SMTP id AA14719 (5.67b+/IDA-1.5); Thu, 2 Feb  
1995 23:15:15 +0100  
Received: by lynx id AA06152 (5.67b+/IDA-1.5); Thu, 2 Feb 1995 23:12:38 +0100  
Date: Thu, 2 Feb 1995 23:12:38 +0100  
From: Vicente <vdomingo@so.estec.esa.nl>  
Message-ID: <199502022212.AA06152@lynx>

To: cdp@astrol.bnsc.rl.ac.uk, galvin@umdsp.umd.edu,  
ifkki.dnet!mueller\_m@estgtw.estec.esa.nl, gurman@uvsp.gsfc.nasa.gov,  
lumme@sara.cc.utu.fi, grec@ayalga.unice.fr, howard@maple.nrl.navy.mil,  
rbush@solar.stanford.edu,  
nsp.dnet!iaslab.dnet!lemaire@estgtw.estec.esa.nl,  
Walter.Schmidt@fmi.fi, vanballe@cfa.harvard.edu, ajm@iac.es,  
poland@pal.gsfc.nasa.gov, cst@sdac.gsfc.nasa.gov,  
bfleck@so.estec.esa.nl, pmartens@so.estec.esa.nl,  
lsanchez@so.estec.esa.nl, elarduinat@ess-mail.atssc.allied.com,  
vdomingo@so.estec.esa.nl, mssl.dnet!jhp@estgtw.estec.esa.nl,  
sohoswt@solar.stanford.edu, dmuhonen@istp2.gsfc.nasa.gov,  
worrall@istp2.gsfc.nasa.gov, dmachi@nssdca.gsfc.nasa.gov,  
sohofot@istp.dnet.estec.esa.nl, kwalyus@gsfcmail.nasa.gov,  
cbwhite@gsfcmail.nasa.gov, hschweit@istp.dnet.nasa.gov,  
svaghi@estec.esa.nl, cberner@estec.esa.nl, ffelici@estec.esa.nl,  
bandersen@solar.stanford.edu, bochsler@phim.unibe.ch,  
gnoci@solar.stanford.edu, gilbert.leppelmeier@fmi.fi,  
nsp.dnet!linmpi.dnet!schwenn@estgtw.estec.esa.nl,  
michels@maple.nrl.navy.mil, ipavich@umdsp.umd.edu,  
wnzel@so.estec.esa.nl, mhuber@estec.esa.nl

Subject: SOWG meeting

X-Sun-Charset: US-ASCII

X-MX-Warning: VMS Mail To: line does not include all To: addresses

Dear colleagues,

Please find below our plans for the next meeting of the SOWG.

Best wishes,

Vicente Domingo

-----  
(This information can also be accessed at  
"http://sohowww.nascom.nasa.gov/operations/SOWG/").

SOHO SOWG meeting

=====

The next SOWG meeting will take place on 21-24 February 1995 at the  
EOF:

It will consist of several meetings in series, so that not everybody  
needs to attend the whole meeting. People should come for the day that  
concerns them.

Tentative break down:

21 full day and 22 am      Participation required: imaging instruments  
-----                      specialists

Software test meeting - Science Planning and scheduling software, and  
command generation software

The experiment teams will have their software installed in the IWS's. The idea is to go room by room having a look at the software of the different groups in the different topics. This includes the ECS software and a check of the exchange of files and information among the different tools. The exercise requires the participation of the coronal instruments and MDI. The other instrument teams are welcome to participate if they have an interest in the activity.

The following topics will be addressed:

- \* Science planning software.
- \* Pointing tool. We need to address how we're going to use ground-based and spacecraft synoptic support data.
- \* Instrument data interoperability (data capture and exchange from/to other experimenters). This was essentially ignored at the last sim.
- \* Instrument activity plans (IAPs). At the last sim., questions were brought up about this. We need to better define how we're going to use these, and the ECS planning software.
- \* Catalog data. We need to define how catalog information will be passed from to and from the ECS system. Bill Thompson proposes to use a format based on that used for the IAPs. This topic about catalog data will be addressed also in the following meeting.

22 pm and 23 am              Participation required: Data archive  
-----                      specialists

Data archives and catalogues - including European archives (these may require a follow on splinter)

The following topics will be addressed:

- \* Hardware.
- \* Catalog data. Keywords and fieldnames. Software available.
- \* Information systems: Web server, anonymous-ftp server, mailing lists.
- \* Mosaic catalog forms. We've made some progress in this area, which should be discussed at the meeting.
- \* Future developments.



23 pm and 24 am                      Participation required:  
-----                      PI team Cruise Phase Experts - ESA/NASA PSO -  
                                 MATRA Experts - ESA/NASA Project - FOT

## Early operations timeline

### Issues:

1. - Planning for Joint Operations (incl. intercalibration and operations requiring S/C manoeuvre)
  - Agreement on feasibility and mutually acceptable times
  - check non-interference with non-participating instruments
  - commissioning sheet type write-up per operation
  - S/C activities requiring instrument participation
2. Planning for intercalibrations after HOI
3. S/C commissioning after HOI: an overview (informational)
4. Switch-on scenario:
  - experiments requiring early switch-on (Day 0) for CCD bake out: Determination of actions required and feasibility.
  - Feasibility of early SWAN switch-on for lunar observations
  - Timing and order of experiments switch-on; FOT procedures.
5. Cruise phase operations rehearsals - planning
6. GSCT2 rehearsal and execution.

## LIST OF UPCOMING ACTIVITIES

(See "<http://sohowww.nascom.nasa.gov/news/>" for updates).

April 24-28	Ground System Compatibility Test 2 (GSCT2) rehearsal at GSFC.
May 1-5	Second Science Operations Simulation (SIM2) at SOHO EOF.
May 5	Science Operations Working Group (SOWG) meeting at GSFC.
May 8	Science Planning Working Group (SPWG) meeting at GSFC.
May 9-10	Science Working Group (SWT) meeting at GSFC.
May 20-June 2	Ground System Compatibility Test 2 (GSCT2) at GSFC.
July 10-14	Third Science Operations Simulation (SIM3) at SOHO EOF (tentative date).

V. Domingo  
2 February 1995

From: MX%"pmartens@esa.nascom.nasa.gov" 17-FEB-1995 20:29:07.88  
To: GALVIN  
CC: MX%"vdomingo@esa.nascom.nasa.gov"  
Subj: Cruise Phase Element of SOWG Meeting

Return-Path: <pmartens@esa.nascom.nasa.gov>  
Received: from gsfc.nasa.gov by UMDSP.UMD.EDU (MX V4.0-1 VAX) with SMTP; Fri,  
17 Feb 1995 20:29:05 EST  
Received: from esa.nascom.nasa.gov by gsfc.nasa.gov (5.65/Ultrix3.0-C) id  
AA19566; Fri, 17 Feb 95 20:28:28 -0500  
Received: from lion by esa (5.0/SMI-SVR4)id AA10766; Fri, 17 Feb 1995 20:27:35  
+0500  
From: pmartens@esa.nascom.nasa.gov (Petrus C. Martens)  
Received: by lion (5.0) id AA04472; Fri, 17 Feb 1995 20:27:15 -0500  
Date: Fri, 17 Feb 1995 20:27:15 -0500  
Message-ID: <9502180127.AA04472@lion>  
X-MX-Warning: Warning -- Invalid "To" header.  
To: ;@distribution (see end of body)  
Subject: Cruise Phase Element of SOWG Meeting  
CC: vdomingo@esa.nascom.nasa.gov  
X-Sun-Charset: US-ASCII  
Content-Length: 23729

Petrus C. Martens  
SOHO Science Operations Coordinator  
ESA Space Science Division at GSFC  
Tel.: + 1 - 301 - 286 - 9028  
Fax: + 1 - 301 - 286 - 0218  
E-mail: pmartens@lion.nascom.nasa.gov

17 February 1995

SOHO PI Teams (SOWG + PIs)  
SOHO Project Office  
SOHO Project Scientist Office  
NASA SOHO FOT

Dear Colleague,

In preparation of the SOWG on "Cruise Phase Activities" at NASA-GSFC on  
23 and 24 February 1995, I am sending you the following materials:

1. A list of operational priorities during the cruise phase
2. Recommendations regarding cleanliness (from Ron Thomas at ESA)
3. An overview and preliminary timeline of SOHO spacecraft activities  
during the cruise phase based on the MATRA provided SVM commissioning  
sheets.
4. A summary of the SVM commissioning activities that require  
participation (in most cases pointing verification) from one or more  
experiments.
5. A list of experiment commissioning activities that involve more than a  
single experiment, or that require S/C maneuvers.
6. A schedule for cruise phase intercalibration activities proposed by  
the SIWG (prepared by Richard Harrison)

These materials will also be distributed in print to the participants at the  
meeting. Please forward this message to any of your team members not on the  
distribution list that may be interested or whose input is required.

are:

- (1) Optics should not be exposed for at least 14 days after launch and where they are then sunlit (all but SWAN), this period should be at least 1 month.
- (2) Where high voltages (>3kV) are used for detectors, these should not be powered at all for 14 days and the eventual switch on should allow a slow run up to working voltage (3 or 4 steps with 1 hour dwell times for example). If the voltages are measured in tens of kV, then wait longer still.

CDS:

Initial commissioning day 23, high voltages ON day 46 and doors open day 51 agrees well with my "rules".

CELIAS:

Initial commissioning day 4, high voltages ON day 5 (CTOF & MTOF), day 13 (STOF), MTOF opens covers day 4, STOF day 12 (CTOF open before launch). It is not an optical experiment so opening early may not matter though the time between opening and high voltage application needs to be long. Since very high voltages are used, my rule 2 is broken and I strongly feel that high voltages should not be applied in the first 30 days, with covers open at least 20 days beforehand.

CEPAC:

Initial commissioning day 5, observations day 8. No doors, no high voltages would allow this commissioning sequence.

EIT:

CCD heating day 4, internal operation day 7, door fully open day 23. CCD heating should be as early as possible, coincident with MDI at +12 hours? The internal operation should be deferred to reduce pressure on other early operations, but has no special cleanliness constraints, other than to extend the CCD heating period.

GOLF:

First power at +6 hours, first cell heating at day 4, door open at day 12. I would like to see a longer period between heating on and the door opening to allow longer outgassing from the hot cell area. I suspect that the first two operations are not really necessarily performed so soon and would suggest 4, 14 and 30 days respectively as more reasonable unless spacecraft operations turn out easy.

LASCO:

First power at day 4, doors open at day 23. No request for CCD heating, which is justifiable even earlier, like MDI. Otherwise, OK.

MDI:

CCD heating at +12 hours, power on at day 4 (including HR TM if available as a spacecraft function then), door open at day 15. I support the CCD heating operation, although EIT and CDS have a stronger case than MDI. I regard 15 days as a little early for the door opening, but the spacecraft TV test may help revise that opinion.

SUMER:

On at day 7, HV ON at day 56 or 77, door open at day 90. No problem.

SWAN:

ON at day 2, science observations at day 3 until 14. The sensors never see the Sun after SOHO achieves pointing so there is little contamination risk of permanent deposition of organics on the cold mirror surfaces. To expose these mirrors within two days of launch seems risky, but the local MLI surfaces should be very cold and the mirrors close to room temperature (?)

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 10-JUL-1995 20:31:37.24  
To: MX%"DIH%MPESMP@MPE.MPE-GARCHING.MPG.DE"  
CC: GALVIN  
Subj: RE: Attending Flight Operation Review at GSFC on 11./12.July 95

Hi Dieter,

I just got the third copy of your request that I attend the meeting tomorrow. In case that means you did not receive my reply -

I had not planned to attend, but will now do so.

I suspect that the meeting is not at Goddard, but nearby.

I will probably be asked about the status of the flight software. Since there are known problems with the existing DPU (on the s/c), at least as regards MTOF, I do not know if the s/w is "finished" or not.

I was out of town for the past two weeks for Solar Wind 8 and IAGA, which is why I did not respond sooner. (I was going to take today off to do my laundry and mow the grass, but the secretary told me about tomorrow's meeting so I came in after all to get your messages.)

Best regards, Toni

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 12-JUL-1995 13:44:25.22  
To: PAL::POLAND  
CC: @MPE,@TUB,GALVIN  
Subj: RE: Information for another review

Hi Art,

I tried to get your attention during your presentation this morning, but I think you could not see the people in the back with those bright lights. Anyway, if you are going to be required to submit that viewgraph with the "grade report", I have been in touch with the CELIAS PI (Hovestadt, MPE) and the CELIAS flight + IWS s/w Co-I (Reiche, TUB). We came up with a consensus, as follows:

S/W status reply to Art Poland

(1) Flight Software	A **
(2) IWS NRT commanding software	A
(3) IWS load generation software	N/A
(4) IWS telemetry capture software	A ***

A = Finished and ready to go  
B = Acceptable, but needs work  
C = needs work to be acceptable  
N/A = not applicable

\*\* software patches will probably be needed, can be sent by command.

\*\*\* The EOF-IWS software for commanding and telemetry capture, and some basic health of instrument type displays is ready to go. This is a PC-based program.

There will also be a different set of s/w used for the EAF-IWS, which will be an AlphaVax program. That software is not as well developed, but is more for science-evaluation and has no command or telemetry-capture aspects.

I am sorry for the delay, but I was out of town for the past two weeks, and so your request only came to our attention on this past Monday.

Best regards, Toni Galvin



## SOHO Science Operations Simulations

The Science Operations Simulations are carried out at the BOP with the collaboration of the whole SOHO Ground Segment, including the Flight Operations Team (CMS and POCC), the spacecraft simulator, ESO, the Data Distribution Facility and the Control Data Handling Facility.

During these activities the experimenters test the different command types they have available and receive simulated telemetry.

Simulated operations are supported by the Simulation Support Facility ready (the Experiment Core System and the PI teams) for SOHO operations.

The simulation support facility consists of the simulation already carried out and those in preparation:

- SIM 1 (Preparation of SIM 2)
- SIM 2 (Preparation of SIM 3)
- SIM 3 (Preparation of SIM 4)

For detailed information on the simulation support facility, see the Simulation Support Facility page.



[Return to the Science Operations page](#)




[Return to the SOHO Home page](#)

SOHO Science Data Coordinator's Contact Sheet  
SOHO Science Data Coordinator's Contact Sheet

SOHO Science Data Coordinator's Contact Sheet





CELIAS Participants  
in SIM 1:

P. WURZ (middle)

A. GALVIN (right)

From: MX%"vdomingo@so.estec.esa.nl" 14-DEC-1994 11:27:28.33  
To: MX%"galvin@umdsp.umd.edu"  
CC:  
Subj: SIM1 report

Return-Path: <vdomingo@so.estec.esa.nl>  
Received: from bcserver.estec.esa.nl by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Wed, 14 Dec 1994 11:27:17 EST  
Received: from [131.176.17.15] by bcserver.estec.esa.nl (AIX 3.2/UCB 5.64/4.03)  
id AA11683; Wed, 14 Dec 1994 17:28:15 +0100  
From: vdomingo@so.estec.esa.nl  
Received: from lynx by dove.so.estec.esa.nl (5.0/SMI-SVR4) id AA29537; Wed, 14  
Dec 94 17:29:45 +0100  
Received: by lynx (5.0) id AA11686; Wed, 14 Dec 1994 17:29:42 --100  
Date: Wed, 14 Dec 1994 17:29:42 --100  
Message-ID: <9412141629.AA11686@lynx>  
To: galvin@umdsp.umd.edu  
Subject: SIM1 report  
X-Sun-Charset: US-ASCII  
Content-Length: 73901

Report on the 1st SOHO Science Operations Simulation, held at the EOF  
%%  
on 15-17 November 1994  
%%

V. Domingo, 8 December 1994

Distribution: SOHO PI's, PI2s, SOWG, Technical team leaders at SIM1,  
ESA/NASA distribution, Science Ops Evaluation Board

## Contents

-----

1. Overview (V.Domingo, A. Poland, C. Stcyr)
2. Review of the technical simulation (E. Larduinat)
  - 2.1 Day by day report
  - 2.2 Test report for ECS planning and scheduling subsystem
  - 2.3 Discrepancies
  - 2.4 Lessons learned
3. Technical functions, compliance matrix summary (L. Sanchez)
  - 3.1 Technical aspects - matrix by functions
  - 3.2 Test discrepancy reports
4. Science Planning meeting comments collection (P. Martens)
5. Future plans and actions
  - 5.1 Actions
  - 5.2 Future plans

## 1. OVERVIEW

=====

The objectives and programme of the first SOHO science operations simulation were described in the FAX dated 7 October 1994, and updated in the e-mail of 7 November, dated 4 November.

The simulation proceeded as planned. For this first occasion the technical operation and the scientific planning were largely decoupled to maximize the technical testing.



This was the first occasion in which all the Instrument Workstations of SOHO, the EOF Core System and the Ground System, up to a Spacecraft simulator behind the POCC, were put together. Both the PI teams and the Ground System staff made a very appreciated effort to run the complete system in the most realistic way though when some of the components were only partially developed and largely untested.

The simulation exercise was very successful in showing the strong and the weak points in the development status of the science operation, i.e.:

- all the PI IWSs and the ECS were able to receive the telemetry and to command the simulated spacecraft, even when all of them operated simultaneously. The relatively few noticed discrepancies should be easily removed before the next simulation.
- several of the file transfer functions between the IWS's (inter-operability), and with the ground system (ancillary data and summary data) were not tested because they were not available, but we intend to have them remotely tested by mid-January.
- most of the communication functions were successfully tested.
- the science operations planning by the Science Operations Team was exercised in a very preliminary manner, but good enough to demonstrate that it is possible to run daily planning meetings in reasonably short time, and helped to clarify ideas on how to run the planning meetings (see Appendix 2 for collected comments).
- the ECS planning tool was run in its preliminary version that showed that some refining is needed, now that it is working. Only one experiment (CDS) had a planning tool, the others intend to build it or to adapt the CDS one.
- the major shortcoming of the overall science operations appears to be the status of the IWS command load generation software that is very unequal.
- the technical facilities (office space, meeting room, communications, etc) were proven to be adequate, taking into account that the extension rooms of the EOF for early operations and auxiliary activities, and the EAF were not yet available. The simulation showed how several aspects could be improved.
- the staff that develops and runs the ground segment part (CMS, POCC, S/C simulator) were able to test their interface with an operating EOF, which helped them and the IWSs operators to find mismatches difficult to find otherwise.

The following chapters contain a descriptive review of the simulation, and relevant comments, as seen from the EOF Core System (#2), a summary of the functions that were up for testing and their success/failure report (#3), a listing of the comments that were collected at the end of the science planning sessions (#4), and the action plan for the future development of science operations preparation (#5).

## 2. REVIEW OF THE TECHNICAL SIMULATION (E. Larduinat)

### 2.1 Day by day report

#### Test 1.1 - File Transfer

A sample copy of the SOHO Daily report (text files with proper header) was transmitted to all the IWSs. This tested the transfer of files from ECS to the IWSs.

The transfer of files from the IWS to the ECS was not formally tested since it was to be performed several times during the upcoming days (see transfer of delayed command files, input to the activity plan, and summary data files).

#### Tests 1.2 - Real-Time Telemetry Distribution For Each IWS Individually

For each IWS in turn, we established a telemetry session, processed their requests indicating which APIDs they want to receive, and transmitted telemetry for approximately 5 minutes before terminating the session. Telemetry was successfully distributed to each IWS and the APID requests corresponded to the requests expected during normal mission operations (see table below).

	Expected APIDs to be distributed to IWS
CDS	8863, 88A3, 88A5, 88A6
CELIAS	8865, 88A9, 8803
CEPAC	8866, 88AA
EIT	8869, 886A, 886C, 88AC, 88AF
GOLF	886F, 88C3
LASCO	8869, 886A, 886C, 88AC, 88AF, 8803, 8805, 8806, 8809, 8833, 8835, 8836, 8839, 880A, 8860
MDI	8893, 8895, 88C5, 80C4
SUMER (sumop2)	8896, 88C6, 88C9, 8865
SUMER (sumop3)	8896, 88C6, 88C9, 8803, 8860
SWAN	8899, 88CA, 8860
UVCS	889A, 88CC
VIRGO	889C, 88CF

#### Tests 1.3 - Real-Time Telemetry Distribution to All IWS Simultaneously

Test 1.2 was repeated, adding one IWS at a time. We connected to all the IWSs and distributed all the requested APIDs for VC0/VC1. Telemetry was transmitted for about 1/2 hour to all IWSs simultaneously verifying that the ECS can sustain the distribution load. Note that the distribution rate is only slightly higher than the incoming PACOR rate due to the fact that very few APIDs are requested by more than one IWS at a time. We consider that this corresponds to the normal operational conditions since the IWSs do not have and do not plan to implement the software to process additional APIDs. The only possible future additions are a few Spacecraft house keeping APIDs which correspond to a very low additional data rate.

Connected to MDI workstation to distribute MDI-M data for 20 minutes while all other IWSs received the VC0/VC1 data.

ECS handled the full telemetry distribution load successfully.

#### Tests 1.4 - Distribution of Quicklook Files

Quicklook tape recorder dump files were received from DDF. ECS encountered problems with the time stamps, QAC list and missing data unit list in some of these files. The problems were corrected by the ECS developers overnight. This test was repeated during the following days

TUESDAY 15 NOVEMBER 1994 (DAY 319)

#### Real-Time Telemetry Distribution All IWS Simultaneously

VC0/VC1 Distribution: Test 1.3 above was to be repeated for the entire day (8:00 to 17:00 local).

In the morning, while initiating the telemetry sessions with the IWSs, we experienced some difficulties due to the following reasons:

- a) The system was hung writing debugging messages to the system console.
- b) The system was hung writing a telemetry message to LASCO whose disk was full. After re-starting the telemetry distribution software, ECS handled the all-day real-time telemetry distribution successfully.

MDI-M Distribution: In the morning, we received and distributed MDI-M data for about 7 minutes. In the afternoon, we connected the with two MDI workstations to distribute MDI-M data for about 23 minutes while all other IWSs continued to receive the VC0/VC1 data.

ECS successfully handled the simultaneous distribution of VC0/VC1 and two streams of MDI-M data.

An additional test was attempted: overnight telemetry reception and distribution to the IWSs. That test was unsuccessful since PACOR stopped transmitting data during the night. This interruption did not cause problems with either the ECS or the IWSs.

#### Tests 1.4 - Distribution of Quicklook Files

This test was repeated on November 15. The quicklook data files were successfully received from DDF. ECS had corrected the problems encountered on November 14. The files were automatically distributed to the IWSs that had requested them (GOLF, CDS, SWAN, LASCO, SUMER-sumop2- and MDI). The other instrument groups have elected to retrieve the files from ECS (UVCS, EIT, CEPAC, CELIAS and SUMER-sumop3). VIRGO has requested to have the files automatically forwarded to their home institution in Tenerife. The VIRGO quicklook files were successfully transferred even if FTP showed a time-out. This transfer will have to be re-tested. This DDF/Quicklook distribution test was successful.

#### Tests 2.1 - Near-Real-Time commanding for each IWS Individually

All instrument teams are expected to perform NRT commanding, except CEPAC, VIRGO, and EIT which will not use that capability. CEPAC will only do delayed commanding, EIT will be commanded via LASCO, and VIRGO does not use OBDH block commands, which prevent them from commanding from the EOF.

On Tuesday morning, the following IWSs were individually tested for approximately 10 minutes each:

CELIAS: this IWS had several problems such as command mnemonics in

lower-case which were rejected by CMS, and missing semicolon at end of message.

MDI: this IWS also had several problems such as incorrect length in command causing arguments to be truncated, and mnemonics in lower-case.

CDS: this IWS will only command in binary and this was successfully tested.

SWAN: Successfully tested commanding in both binary and mnemonic formats. Also sent an invalid command (empty command) and reset after error was satisfactorily tested.

UVCS: this IWS will only command in binary. Mnemonic commanding was not tested. A discrepancy was found with CMS which sent to POCC a rejected command.

GOLF: problem with commands in lower-case. Reset is working properly. Binary commanding was not tested this time.

SUMER-sumop2: only binary commanding was tested. Mnemonic format will not be used. sumop2 could not simulate error to test reset.

SUMER-sumop3: Several problems with command format, such as missing semicolon.

On Tuesday afternoon, we continued the individual NRT commanding tests that could not be completed during the morning.

SUMER-sumop3: problems were corrected by IWS and test was successful. Commands in binary format with incorrect length or incorrect checksum were accepted by CMS/POCC and uplinked. This is in accordance with the CMS requirements, but a DR was generated to document the fact that the instrument teams consider these checks to be necessary.

CELIAS: problems were corrected by IWS and test was successful.

UVCS: UVCS sent a large number of commands. Several of them failed BARM verification and through-put mode was disabled by FOT several times.

GOLF: successfully tested commanding in binary format.

MDI-mdisas: several commands in mnemonic format were rejected by CMS ("syntax error")

SUMER-sumop2: successfully tested commanding in binary format.

MDI-mdisas: successfully tested binary and mnemonic formats

Simultaneous commanding tests: a CELIAS NRT commanding session was started, then, approximately 10 minutes later, UVCS was added. Then LASCO was added and the three instruments were commanded simultaneously

Test 2.1 on 15 November was only partially successful since full simultaneous commanding for all IWSs was not tested.

Background-Queue Files / Large Table Loads

Large table load files were submitted by MDI and GOLF. They were rejected by

CMS. The MDI group talked to the CMS developers about the problems. DRs were written to document these problems.

WEDNESDAY 16 NOVEMBER 1994 (DAY 320)

Real-Time Telemetry Distribution All IWS Simultaneously

VC0/VC1 Distribution to all IWSs between 8:00 to 17:00 local.

The telemetry distribution software was initiated to distribute VC0/VC1 data to all IWSs.

Low rate telemetry: The simulator generated 15 minutes of low rate data. Several IWSs are interested in processing the Experimenter Housekeeping packet (APID 8860). SUMER and SWAN processed that data and found discrepancies with the location of their data within the packet. It was identified later as a problem with the compiled ADA code in the SOHO simulator which caused a mis-alignment.

Medium rate telemetry: medium rate VC0/VC1 was received for the rest of the day. ECS distributed it successfully to the IWSs, while the ECS operator verified the capability to "CANCEL" and "ADD" IWS telemetry sessions during the course of a pass.

MDI-M data: ECS received and transmitted MDI-M data for one hour and fifteen minutes to two MDI workstations while transmitting VC0/VC1 data to several other IWSs. Towards the end of the session, PACOR sent a big burst of data which causes ECS to drop packets to MDI. Also the CAPTURE task terminated abnormally.

The overnight telemetry test failed again due to PACOR problems.

Distribution of Quicklook Files

Received the quicklook files from DDF successfully. These files were automatically transmitted to the IWSs that requested them. Other IWSs retrieved them from ECS. The instrumenters processed these files. UVCS had a question concerning fill data in their last packet. It was determined that this should be a normal occurrence: fill data will be provided for incomplete packets that may occur when the tape recorder was turned off.

This DDF/Quicklook distribution test was successful.

Near-Real-Time Commanding for All IWS Simultaneously

We started the test by providing additional individual time to UVCS, LASCO and CELIAS.

Then simultaneous NRT commanding was tested by adding one IWS at a time: GOLF, SUMER-sumop2, SUMER-sumop3, MDI, CDS, SWAN LASCO, UVCS and CELIAS. We experienced several delays with the SMOCC, apparently due to retransmission delays of ccommands that failed BARM.

ECS demonstrated that all the commanding IWSs could be supported simultaneously while receiving real-time telemetry.

Delayed Commanding

Delayed commands were submitted for uplink on Thursday 17:00 - 18:00. Validation reports were received from CMS indicating that the submitted files were valid for all instruments except EIT and VIRGO who will not use that capability. The submission of delayed command files to ECS and reception by CMS was successfully tested. CELIAS send a very large file which caused problems in CMS. A DR documented this problem.

### Background Queue Commanding

Valid background queue files (large instrument table loads) were submitted by CDS, LASCO, SUMER-sumop2, GOLF and UVCS. CMS still could properly validate the input from MDI and GOLF.

THURSDAY 17 NOVEMBER 1994 (DAY 321)

### Real-Time Telemetry Distribution All IWS Simultaneously

The telemetry system tlm2 stalled twice in the morning which forced us to reboot. The reason is not obvious. Interestingly, all the IWSs connected with the telemetry subsystem indicated an active socket connection. We need to investigate the cause in TCP/IP level.

VC0/VC1 Distribution to all IWS between 8:00 to 17:00 local.

Low rate telemetry: The simulator generated 15 minutes of low rate data.

Medium rate telemetry: medium rate VC0/VC1 was received for the rest of the day.

MDI-M data: ECS received and transmitted MDI-M data for one hour.

### Distribution of Quicklook Files

Received the quicklook files from DDF successfully. These files were automatically transmitted to the IWSs that requested them. This DDF/Quicklook distribution test was successful.

Note: VIRGO instrument telemetry data does not contain LOBT or OBT. This is causing a discrepancy with their Archived Telemetry file names and with the Quicklook file names. A solution to this problem is being worked on with PACOR.

### Near-Real-Time Commanding for All IWS Simultaneously

Simultaneous NRT commanding was tested during two 2-hour sessions.

### Delayed Commanding

The delayed command files submitted the previous day were successfully uplinked. This was verified by inspection of the Command History Report which was only available in hard-copy form. In the future, it should be available electronically.

FRIDAY 18 NOVEMBER 1994 (DAY 321)

Real-Time Telemetry Distribution All IWS Simultaneously

15 minutes of low rate. 45 minutes of medium rate

One hour of NRT commanding

Reception of Summary data from CDS, EIT, MDI, SUMER and UVCS.

Input to the Activity Plan from CDS,EIT,LASCO,MDI,SUMER,UVCS

Completed testing of ancillary functions such as network time services and  
E-mail

### 3. TECHNICAL FUNCTIONS. COMPLIANCE MATRIX SUMMARY (L. Sanchez)

=====

Succ: success  
Part: partially successful  
Fail: failed  
NT: not tested  
TBS: to be supplied-  
N/A: not applicable

#### 3.1 Technical aspects - Matrix by functions

=====

##### FUNCTION: NEAR REAL TIME COMMANDING

NRT Commanding session Succ: UVCS, SWAN, SUMERF, SUMERD, MDI, LASCO, GOLF, CELIAS and CDS  
Part: SWAN  
Fail:  
NT:  
TBS:  
N/A: VIRGO, EIT, CEPAC  
- GOLF experimented CMS 'pauses' or 'disables' on Nov 17.  
(Comment: these 'pauses' and 'disables' are included in the nominal operation of the system).

Mnemonic commanding Succ: SUMERD, MDI, GOLF and CELIAS  
Part: SWAN  
Fail:  
NT:  
TBS: SUMERF  
N/A: VIRGO, UVCS, LASCO, EIT, CEPAC and CDS  
- PDB format error for SWAN partly overcome by IWS fix.  
(Comment: see response to Schmidt-2 TDR)  
- RCR was enabled for SUMER side on Nov 15 so an error flag was always raised: solved reconfiguring SUMER after closure of the NRT channel (TDR Buettner-1).  
(Comment: This was a IWS bad configuration problem).  
- Mnemonics not yet implemented in SUMERF database.  
(No comment)  
- CELIAS: Wrong syntax used on Nov 15 (lowercase and no semicolon). Solved on Nov 15 afternoon.  
(Comment: The ICD IWS/ECS will be modified: all commands. RPRs and RCRs are uppercase).

Mnemonic command status Succ: SUMERD, SWAN, MDI, GOLF, CELIAS  
Part:  
Fail:  
NT:  
TBS: SUMERF  
N/A: VIRGO, UVCS, LASCO, EIT, CEPAC, CDS

Binary commanding Succ: UVCS, SWAN, SUMERF, SUMERD, MDI, LASCO, GOLF, CELIAS, CDS  
Part:  
Fail:



NT:  
 TBS:  
 N/A: VIRGO, EIT, CEPAC  
 - UVCS: failed TLOAD, initially.  
 - CELIAS did not test during the first two sessions  
 (change required in IWS command generation program).

Binary command status      Succ: UVCS, SWAN, SUMERF, SUMERD, MDI, LASCO, GOLF, CELIAS, CDS -  
                                  Part:  
                                  Fail:  
                                  NT:  
                                  TBS:  
                                  N/A: VIRGO, EIT, CEPAC

Rejection by CMS of  
 invalid NRT command      Succ: UVCS, SWAN, SUMERF, MDI, LASCO, GOLF, CDS  
                                  Part: SUMERD, CELIAS  
                                  Fail:  
                                  NT:  
                                  TBS:  
                                  N/A: VIRGO, EIT, CEPAC  
 - SUMERD, CELIAS: CMS/ECS error messages do not  
 differentiate between errors as described in  
 the ICD and complementary data sheet  
 distributed by the FOT on Nov 16, 1994 (TDRs  
 Buettner-2, Galvin-1)  
 (Comment: a Discrepancy Report has been filled to CMS).

Appropriate response  
 received from invalid  
 OBDH command rejected  
 by ECS      Succ: UVCS, SWAN, SUMERF, MDI, LASCO, GOLF  
                                  Part: SUMERD, CELIAS  
                                  Fail:  
                                  NT:  
                                  TBS:  
                                  N/A: VIRGO, EIT, CEPAC, CDS  
 - SUMERD, CELIAS: As above (TDRs Buettner-2, Galvin-1)

IWS can send a reset  
 to clear the IWS error  
 status      Succ: UVCS, SWAN, SUMERF, SUMERD, MDI, LASCO, GOLF, CELIAS, CDS  
                                  Part:  
                                  Fail:  
                                  NT:  
                                  TBS:  
                                  N/A: VIRGO, EIT, CEPAC

IWS can resume  
 commanding after a  
 reset      Succ: UVCS, SWAN, SUMERF, SUMERD, MDI, LASCO, GOLF, CELIAS, CDS  
                                  Part:  
                                  Fail:  
                                  NT:  
                                  TBS:  
                                  N/A: VIRGO, EIT, CEPAC

RCR/RPR commanding      Succ: UVCS, GOLF  
                                  Part:  
                                  Fail:  
                                  NT: SWAN, SUMERF, SUMERD, MDI, LASCO, CELIAS, CDS  
                                  TBS:  
                                  N/A: VIRGO, EIT, CEPAC  
 - A GOLF RPR failed (the procedure was not on FOT list)

FUNCTION: NRT THROUGHPUT STATE NOTIFICATION

Enable/NoRCR	Succ:	UVCS, SUMERF, SUMERD, MDI, GOLF, CELIAS, CDS
	Part:	
	Fail:	
	NT:	SWAN, LASCO
	TBS:	
	N/A:	VIRGO, EIT, CEPAC

```

Enable/RCR          Succ:    UVCS, SUMERF, SUMERD, MDI, GOLF, CELIAS, CDS
                    Part:
                    Fail:
                    NT:      SWAN, LASCO
                    TBS:
                    N/A:     VIRGO, EIT, CEPAC

```

Paused Succ: UVCS, SUMERF, SUMERD, MDI, LASCO, GOLF, CDS  
Part:  
Fail:  
NT: SWAN, CELIAS  
TBS:  
N/A: VIRGO, EIT, CEPAC

Disable                    Succ:    UVCS, SUMERF, SUMERD, GOLF, CELIAS, CDS  
                             Part:  
                             Fail:  
                             NT:        SWAN, MDI, LASCO  
                             TBS:  
                             N/A:        VIRGO, EIT, CEPAC  
                             - SUMERD: Channel was closed before arrival of  
                                 notification.  
                                 (On Nov 15, p.m.: This was due to a CMS crash).

Shutdown warning

Succ: UVCS, SUMERD, MDI, LASCO, GOLF, CELIAS, CDS

Part:

Fail: SUMERF

NT: SWAN

TBS:

N/A: VIRGO, EIT, CEPAC

- SUMERF: Message never arrived or not interpreted.  
(All IWS were receiving this message: IWS software  
problem?)

FUNCTION: DELAYED COMMANDING

```

IWS submits delayed      Succ:  UVCS, SUMERF, SUMERD, SWAN, MDI, LASCO, CEPAC,
command file              CDS
                          Part:  GOLF, CELIAS
                          Fail:
                          NT:
                          TBS:
                          N/A:   VIRGO, EIT
- GOLF:  Accepted by ECS but lost by CMS on Nov 15 & 16
- CELIAS: Large command file crashes CMS.
  (Comment: The FOT nominal procedures were not
            in place during this simulation, so when a
            crash of the CMS system happened, the operator
            switched to the backup system without
  
```

recovering the files from the original system:  
these files were lost. This will not happen  
once the FOT procedures are in place).

IWS receives command  
validation report

Succ: UVCS, SUMERF, SUMERD, SWAN, MDI, LASCO, GOLF,  
CDS

Part:

Fail: CELIAS

NT:

TBS:

N/A: VIRGO, EIT, CEPAC

- CELIAS: File names as specified in ICD cannot conform to PC 8 character limit This caused the truncation of validation reports and overwrite of earlier, similarly truncated, files. Verification files cannot be set to subdirectories because of '.' and '/' problem: not received.

(Comment: The validation report files have the same filename as the file submitted by the IWS with the extension changed to '.VRP'. So if the filename is properly chosen, there will be no overwriting. The other option is to download the validation reports from ECS via 'ftp', as CEPAC does).

- CEPAC: retrieves the report with 'ftp'.

IWS verifies content  
of command validation  
report

Succ: UVCS, SUMERF, SUMERD, SWAN, MDI, LASCO, GOLF,  
CEPAC, CELIAS, CDS

Part:

Fail:

NT:

TBS:

N/A: VIRGO, EIT

IWS verifies that  
uplink status is  
properly reflected in  
command history report

Succ:

Part:

Fail: UVCS, SWAN, SUMERF, SUMERD, MDI, LASCO, GOLF  
CEPAC, CELIAS, CDS

NT:

TBS:

N/A: VIRGO, EIT

- No valid reports were received  
(Comment: This function was not really tested.  
The only report received was in hard-copy  
format).

ECS verifies uplink  
status

?

(Comment: same as above).

#### FUNCTION: BACKGROUND QUEUE COMMANDING

IWS submits background  
queue command file

Succ: UVCS, SUMERF, CDS

Part:

Fail: MDI, GOLF

NT: SWAN, SUMERD

TBS:

N/A: VIRGO, LASCO, EIT, CEPAC, CELIAS

- MDI, GOLF: Nominal command files always rejected by CMS due to 'block too long', short test files were sent

successfully.

(Comment: Two Discrepancy Reports have been sent to CMS)

- SWAN: usually will not use the background queue, verified during IWS integration.

IWS receives command validation report

Succ: UVCS, CDS  
Part:  
Fail: MDI, GOLF  
NT: SWAN, SUMERF, SUMERD  
TBS:  
N/A: VIRGO, LASCO, EIT, CEPAC, CELIAS

IWS verifies content of command validation

Succ: UVCS  
Part:  
Fail: MDI, GOLF  
NT: SWAN, SUMERF, SUMERD, CDS  
TBS:  
N/A: VIRGO, LASCO, EIT, CEPAC, CELIAS

IWS verifies that uplink status is properly reflected in command history report

Succ:  
Part:  
Fail: UVCS, SWAN, SUMERF, SUMERD, MDI, GOLF, CDS  
NT:  
TBS:  
N/A: VIRGO, LASCO, EIT, CEPAC, CELIAS  
- No valid reports were received

ECS verifies uplink status from CMS

- ?  
- CDS: When ECS crashes the information of the previous session is lost after the reboot.  
(Comment: As above, the FOT nominal procedures were not in place yet).

#### FUNCTION: TELEMETRY DISTRIBUTION

Real-time telemetry distribution

Succ: VIRGO ( 1 socket )  
UVCS ( 2 sockets )  
SWAN ( 1 socket )  
SUMERF ( 1 socket )  
SUMERD ( 1 socket )  
MDI ( 2 sockets, typically)  
LASCO ( 1 socket )  
GOLF ( 3 sockets )  
EIT ( 1 socket )  
CEPAC ( 1 socket )  
CELIAS ( 3 sockets )  
CDS ( 1 socket )  
Part:  
Fail:  
NT:  
TBS:  
N/A:

Real-time distribution of VC0/VC1 packets

Succ: VIRGO ( 2 APIDs , 889c 88cf )  
UVCS ( 2 APIDs , 88cc 889a )  
SWAN ( 3 APIDs , 8899 88ca 8860 )  
SUMERF ( 3 APIDs , 8896 88c6 88c9 )  
SUMERD ( 4 APIDs , 8896 88c6 88c9 8060 )

MDI ( 4 APIDs )  
 LASCO ( 6 APIDs )  
 GOLF ( 3 APIDs , 886f 88c3 8860 )  
 EIT ( 5 APIDs , 88ac 8869 886a 886c 88af )  
 CEPAC ( 2 APIDs , 8866 88aa )  
 CELIAS ( 4 APIDs , 8803 8860 8865 88a9 )  
 CDS ( 4 APIDs )

Part:

Fail:

NT:

TBS:

N/A:

- VIRGO: SC packets include LOBT and VIRGO does not include LOBT (TDR Gomez-1)  
 (Comment: Already fixed).
- VIRGO: SC and HK packets are not time-correlated (TDR Gomez-1)  
 (Comment: fixed during the tests).
- SWAN, CELIAS: There was a 12-byte shift of data (on the first 'contact' for SWAN, on the third for CELIAS).  
 (Comment: fixed after the problem appeared).
- SUMER also requested SVM HK 1, 2, 3 and 4 successfully
- MDI: TLM distribution died occasionally.  
 (Comment: This is a ECS problem. The ECS team is currently looking into that).
- EIT: One session was terminated by unfamiliar message.  
 (Comment: ECS personnel will help EIT to debug this).

Archived real-time TLM retrieval by IWS

Succ: UVCS, LASCO, GOLF, EIT, CEPAC  
 Part: VIRGO, CELIAS  
 Fail:  
 NT: SWAN, SUMERF, SUMERD, MDI, CDS  
 TBS:  
 N/A:

- VIRGO: The file name convention is based on the LOBT and VIRGO SC data does not have LOBT (TDR Gomez-4)  
 (Comment: Pacor is currently looking for another naming convention).
- CELIAS: PC name truncation

Archive real-time TLM sent by ECS

Succ: SWAN, SUMERF, MDI, GOLF, CEPAC, CDS  
 Part: VIRGO  
 Fail:  
 NT: SUMERD, LASCO  
 TBS:  
 N/A: UVCS, EIT

- VIRGO: Due to restriction in the IWS the files were sent to Tenerife, Spain.
- CELIAS: No information.

Archived quicklook TLM retrieval by IWS

Succ: UVCS, GOLF, EIT, CEPAC  
 Part: VIRGO, CELIAS  
 Fail:  
 NT: SWAN, SUMERF, SUMERD, MDI, LASCO, CDS  
 TBS:  
 N/A:

- VIRGO: The file name convention is based on the LOBT and VIRGO SC data does not have LOBT (TDR Gomez-3)  
 (Comment: ECS will adopt the same naming convention as Pacor -- see 'Archived real-time

- TLM retrieval by IWS, above).
- CELIAS: PC name truncation

Archive quicklook TLM  
sent by ECS

Succ: SWAN, SUMERF, MDI, GOLF, CDS  
Part: VIRGO  
Fail:  
NT: SUMERD, LASCO, CEPAC  
TBS:  
N/A: UVCS, EIT

- VIRGO: Due to restriction in the IWS the files were sent to Tenerife, Spain.
- SWAN: HK files sometimes empty.  
(Comment: The problem \*may\* be solved by now, but needs additional testing during the next SIM).
- GOLF, CELIAS: Header time incorrect.  
(Comment: This was a ECS problem, it is fixed now).

#### FUNCTION: FILE TRANSFER AND SCIENCE SUPPORT DATA EXCHANGES

Activity plan

Succ: UVCS, SWAN, EIT  
Part: MDI  
Fail:  
NT: SUMERF, SUMERD, LASCO, GOLF, CEPAC, CELIAS, CDS  
TBS:  
N/A: VIRGO

- UVCS: It was unclear which versions of the input files were used: should be ordered by start time.
- MDI: Comment field beyond 80 characters is lost: allows only ~10 characters of comments for each program.  
(Comment: This is a ECS problem. Will be fixed for the next SIM).
- EIT: File name has only 2 digits for year.  
(Comment: The ICD IWS/ECS will be modified to include 4 digits).

Summary data

Succ:  
Part:  
Fail:  
NT: VIRGO, UVCS, SUMERF, SUMERD, MDI, LASCO, GOLF, EIT, CEPAC, CELIAS, CDS  
TBS: SWAN  
N/A:

Predictive orbit data

Succ:  
Part:  
Fail:  
NT: ALL  
TBS:  
N/A:

- Predictive orbit data were not available at ECS.

Definitive orbit data

Succ:  
Part:  
Fail:  
NT: ALL  
TBS:  
N/A:

- Definitive orbit data were not available at ECS.

Definitive attitude      Succ:  
                         Part:  
                         Fail:  
                         NT:        ALL  
                         TBS:  
                         N/A:  
- Definitive attitude data were not available at ECS.

Command history report   Succ:    UVCS, SUMERF  
                         Part:  
                         Fail:  
                         NT:        SWAN, SUMERD, MDI, LASCO, GOLF, EIT, CEPAC,  
                                     CELIAS, CDS  
                         TBS:  
                         N/A:        VIRGO

Time correlation report   Succ:  
                         Part:  
                         Fail:  
                         NT:        ALL  
                         TBS:  
                         N/A:  
- Time correlation data were not available at ECS.

SOHO daily report        Succ:    SUMERF, GOLF, CELIAS  
                         Part:  
                         Fail:  
                         NT:        VIRGO, UVCS, SWAN, SUMERD, MDI, LASCO, EIT,  
                                     CEPAC, CDS  
                         TBS:  
                         N/A:  
- The only daily report availablw was for Nov 14.

IWS input to activity    Succ:    MDI  
plan                      Part:  
                         Fail:  
                         NT:        GOLF  
                         TBS:        UVCS, SWAN, SUMERF, LASCO, EIT, CDS  
                         N/A:        VIRGO, SUMERD, CEPAC, CELIAS

IWS input to summary    Succ:    UVCS, SUMERF, MDI, EIT, CDS  
data                      Part:  
                         Fail:  
                         NT:        CEPAC, CELIAS  
                         TBS:        VIRGO, SWAN, LASCO  
                         N/A:        SUMERD, GOLF  
- No ARDB information: SUMERF, MDI, EIT  
- CEPAC and CELIAS submit key parameters to CDHF.

#### FUNCTION: OTHER EOF FUNCTIONS (communications)

E-mail                   Succ:    SWAN, SUMERF, MDI, LASCO, GOLF, EIT, CDS  
                         Part:    CELIAS  
                         Fail:  
                         NT:        UVCS  
                         TBS:  
                         N/A:        VIRGO, SUMERD, CEPAC  
- At the time of the simulation, there was not possible

- to send e-mail outside GSFC.  
(Comment: DNS is fixed now).
- CELIAS: Their PC cannot send/receive e-mail. Used an account at University of Maryland. They request an account somewhere in the ECS for this purpose.  
(Comment: Some solution is being worked out between ECS and Galvin).

#### NSI connection

Succ: VIRGO, SWAN, SUMERF, MDI, LASCO, GOLF, EIT, CEPAC, CELIAS, CDS  
 Part:  
 Fail:  
 NT: UVCS  
 TBS:  
 N/A: SUMERD

#### Time services

Succ: VIRGO, UVCS, SUMERF, SUMERD, MDI, LASCO, GOLF, EIT, CELIAS, CDS  
 Part:  
 Fail:  
 NT:  
 TBS: SWAN  
 N/A: CEPAC  
 - CDS discourages the use of broadcasted NTP, as supplied by ECS.  
 (Comment: Sanchez to find out why).

#### Display of ECS windows

Succ: SWAN, LASCO, GOLF, CELIAS, CDS  
 Part: SUMERF, MDI  
 Fail:  
 NT: UVCS  
 TBS: SUMERD  
 N/A: VIRGO, CEPAC  
 - SUMERF: Problems with VMS version of the software.  
 - MDI: Not reliable.  
 (Comment: need some additional information about this point).  
 - EIT: No information provided  
 - CELIAS: A verbal request was needed in order to get the ECS windows. The PC cannot run the C code provided by ECS, so CELIAS requests a X11-based window distribution.  
 (Comment: there are problems with 'little-endian' machines. There are also three different workarounds to the problem that can be tested during next simulation).

#### Informational messages

Succ: UVCS, SUMERD, GOLF, CDS  
 Part:  
 Fail: MDI  
 NT: SUMERF, CELIAS  
 TBS:  
 N/A: VIRGO, CEPAC  
 - MDI: Have not seen any message.  
 - CELIAS: Phone was used for informational messages.  
 - No information provided: LASCO, EIT

FUNCTION: PLANNING AND SCHEDULING



### 3.2 Test discrepancy reports

=====

43 TDR were submitted, 40 different.

- 5 - NRT commanding.
- 4 - Delayed commanding.
- 1 - Background queue.
- 1 - Delayed and background commanding.
- 2 - NRT telemetry distribution.
- 3 - Archived telemetry distribution.
- 7 - File transfers and science support data exchanges.
- 16 - Other EOF functions
  - 1 - Planning and scheduling.
  - 3 - SUMER

Blum	1
Buettner	2
Charra	2
Galvin	2
Gomez	5
Gurman	1
Larduinat	1
Martens	10
Payne	6
Platzer	2
Sanchez	6
Schmidt	2
Thompson	3

#### NRT COMMANDING

-----

SCHMIDT-1: FAILED. NRT commanding of SWAN TC NBLLOCKN

DESC: Command was rejected as critical command.

REASON: 'Critical' flag set in PDB.

RECOV: Flag should be removed in the MATRA-supplied database by MATRA/ESA.  
Verification on POCC side that sending of this command is allowed.

COMM: It is essential that the command can be sent directly from the  
IWS during initial commissioning. The effects of this command  
on the instrument are guarded by instrument hardware and flight  
software.

This TDR is issued to ensure to keep the issue open until it is  
resolved.

RESP: The FOT will prepare a procedure to request modifications in  
he database contents. This is the procedure that should be used  
in this case.

SCHMIDT-2: FAILED. NRT telecommanding of some SWAN TCs

DESC: 15 out of 65 SWAN commands were rejected by CMS due to syntax  
error.

REASON: PDB contains only partial masks for some parameter constants  
due to wrong format in PDB.

RECOV: 1) SWAN-IWS implemented workaround solution: subsequent test  
were sucessful.  
2) PDB has to be corrected after last MATRA supplied database  
is implemented.

COMM: It is important that the final database is checked by SWAN team

members as early as possible.

RESP: This will be fixed by FOT in the conversion process of the PDB.  
SWAN should test it again during next simulation.

BUETTNER-2: PARTIALLY SUCCESSFUL. Rejection of commands / appropriate response by CMS/ECS.

DESC: CMS/ECS error messages do not differentiate between errors as described in ICD and complementary sheet distributed by FOT on Nov 16, 1994.

REASON: Not implemented

RECOV: ?

RESP: A Discrepancy Report has been sent to CMS.

GALVIN-1: PARTIALLY SUCCESSFUL. Appropriate responses to invalid commands.

DESC: Several different kinds of invalid commands were tried. Not all 'reason codes' were reasonable.

REASON: Ask CMS!

RECOV: To implement ICD table 3.4

COMM: INVALID COMMAND TYPE	EXPECTED ERROR CODE	RECEIVED ERROR CODE
----------------------------	------------------------	------------------------

-----	-----	-----
Start CMD request not received	10	10

Syntax error	2	2
--------------	---	---

Mnemonic not found in PDB	3 *	2 *
---------------------------	-----	-----

Duplicate ID	5	5
--------------	---	---

Disabled by previous error	11	11
----------------------------	----	----

Binary disallowed	6	6
-------------------	---	---

Invalid instr. for this socket	9 *	2 *
--------------------------------	-----	-----

Critical command	? *	2 *
------------------	-----	-----

Wrong number of parameters (1)	? *	2 *
--------------------------------	-----	-----

Throughput shutdown	1	1
---------------------	---	---

\* - Error

(1) - I am not sure if this counts as format error or syntax error.

RESP: A Discrepancy Report has been sent to CMS.

PAYNE-4: PARTIALLY SUCCESSFUL. RCR, RPR.

DESC: RCRs and RPRs were only tested with dummy files.

COMM: FOT required to provide STOL. CDS supply FOT with list of new RCRs.

RESP: This function should be retested during the next simulation,  
once the RPR and RCR are at FOT.

#### DELAYED COMMANDS

LARDUINAT-1: UNSPECIFIED. Delayed commands.

DESC: Delayed command files rejected by CMS.

RECOV: Do not put embedded blanks in 'ORIG\_ID' field of file.

RESP: The ICD between IWS/ECS will be modified accordingly.

GALVIN-2: FAILED. Delayed commands.

DESC: Delayed commands do not allow for 'Pause' or 'Wait' in between commands.

RECOV: Include capability of 'wait xx min' or 'wait xx sec' into delayed command file.

COMM: Use of multiple delay files to compensate for lack of 'wait' capabilities did not work. Use of 'dummy' commands (i.e. real commands with no function) required large command lists (~1200 lines) which crashed CMS.

RESP: It appears that there is no way to achieve this. In any case, Eliane Larduinat will clarify this topic with CMS.

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 31-JAN-1995 23:15:18.47  
To: IPAVICH  
CC: GALVIN  
Subj: eof hw status as of SIM1

Hi Fred,

The following is my report on the EOF. Give everyone my best.

Toni

The current H/W at the SOHO EOF consists of a PC-clone 486 provided by TUB. The software is similar to that used for s/c tests, and provides basic snapshot capabilities for the dpu and sensors. (Each sensor team is responsible for making up their respective displays.) The system is excellent for sending commands, but the current set up has the following limitations:

- (1) There are no internal checks on command validity or command safety (i.e., critical commands). One can place passwords on command buttons, but there are many ways to circumvent that. Also, right now existing command buttons are in binary, which we have decided as a team never to use. (Binary commands are not checked by the FOT database.)
- (2) The PC needs additional hard disk storage space.
- (3) The PC does not have the necessary h/w and s/w to receive or send e-mail messages. This hindered communication with the Flight Operations Team, and the Science Operations Coordinator. As a temporary solution, we had the mail sent to UMD. But this requires looking at the account -- an urgent message would not be seen for hours/days. Even if the ALPHA VAX in the EAF has mailing capabilities, the EAF is physically in a different building from the EOF and hence has the same limitations as an account at UMD (or UB, or MPE, or MP Ae or TUB).
- (4) The SOC will send quicklook, realtime retrieved telemetry, and other ancilliary data files directly to defined destinations. But, the file names are too long for the PC, and the truncation keeps the least significant information. Since the PC only keeps the latest version of the files that end up with the same name, we ended up having the files sent to the IMP/Vogager disk at UMD -- a temporary solution at best. This may be solved with the use of the ALPHA VAX at the EAF.
- (5) The GSE program can only read telemetry in realtime. It cannot read the telemetry files mentioned in point (4). That means the GSE can only look at data that was recorded on its own system. This data must be requested manually through the GSE and must be restarted manually in the event of a telemetry dropout (which occurred fairly frequently as the FOT went down). It was not

clear at the time if the s/w being developed by Peter Wurz would work on the FOT recorded data files (he has copied some of these files from the UMD IMP/Voyager account to UB for tests). Even if the Bern s/w works -- there is not as yet HK displays available. Again, this s/w would require the use of the EAF VAX.

- (6) It is still assumed that each sensor will bring its own PC and printer to the EOF. MPE will supply the ALPHA VAX and x-window monitor to the EAF. UMD will supply a laser jet printer to the EAF. UB will supply the s/w to the EAF.
- (7) The PC environment had difficulty with the x-window ECS (EOF Command System) displays (written in C on a Unix system), so we had to by-pass the normal procedures. We have to ask for the ECS window displays to be distributed to us as a passive client. This seemed to work ok, but there is no guarantees that it will always be available. The displays contain information on command processing and telemetry availability, and is therefore most useful in the EOF, not the EAF (where the ALPHA VAX would have the capabilities).

Another note, not hardware related:

CELIAS, as a non-resident IWS, is expected to use DELAYED commanding. The capabilities and limitations of this form of commanding was never discussed or documented before this SIM. The setup for DELAYED commanding was apparently written under the assumption that each experiment was capable of internal time tagging for command execution. (Apparently this capability is true for most SOHO experiments.) As such these command files are only appropriate for single commands or groups of commands where no "pauses" between commands are needed, and where the time of execution is not critical. Also, delayed commands are completely automated: All comments you insert are stripped out by the computer before the FOT gets the file. So don't expect any manual checks or intervention by the FOT. Our best bet seems to be to use pre-written FOT procedures. This means having these procedures ready months or at least weeks ahead of time. The FOT hope to eventually get procedures done within a few days of submission, but that capability is not yet proven. The FOT estimated that the procedures that they received last October would be ready by March or April. While I am sure this will speed up with practice, it will also slow down as more teams submit procedures. (The procedures have to be translated to TSOL and tested before use.)

I think each sensor team will have to be responsible for writing their own procedures, although I can interact with the FOT on implementation. It would be useful for all

teams to have a DPU manual on the available commands and associated parameter definitions. I know I could use one.

From: MX%"vdomingo@so.estec.esa.nl" 20-JUN-1995 11:31:35.58  
To: MX%"sohoswt@solar.stanford.edu",MX%"cdp@astro1.bnsc.rl.ac.uk",MX%"galvin  
CC:  
Subj: SOHO SIM3, SWT15 and other meetings

Return-Path: <vdomingo@so.estec.esa.nl>  
Received: from dove (dove.so.estec.esa.nl) by UMDSP.UMD.EDU (MX V4.0-1 VAX)  
with SMTP; Tue, 20 Jun 1995 11:31:30 EDT  
Received: from lynx by dove with SMTP id AA00901 (5.67b+/IDA-1.5); Tue, 20 Jun  
1995 17:32:10 +0200  
Received: by lynx id AA01384 (5.67b+/IDA-1.5); Tue, 20 Jun 1995 17:31:41 +0200  
Date: Tue, 20 Jun 1995 17:31:41 +0200  
From: Vicente <vdomingo@so.estec.esa.nl>  
Message-ID: <199506201531.AA01384@lynx>

To: sohoswt@solar.stanford.edu, cdp@astro1.bnsc.rl.ac.uk,  
galvin@umdsp.umd.edu, ifkki.dnet!mueller\_m@estgtw.estec.esa.nl,  
gurman@uvsp.gsfc.nasa.gov, lumme@sara.cc.utu.fi, grec@ayalga.unice.fr,  
howard@maple.nrl.navy.mil, rbush@solar.stanford.edu,  
plemaire@solar.stanford.edu, Walter.Schmidt@fmi.fi,  
vanballe@cfa.harvard.edu, ajm@iac.es, poland@pal.gsfc.nasa.gov,  
cst@sdac.gsfc.nasa.gov, bfleck@so.estec.esa.nl,  
pmartens@so.estec.esa.nl, lsanchez@so.estec.esa.nl,  
elarduinat@ess-mail.atsc.allied.com, vdomingo@so.estec.esa.nl,  
mssl.dnet!jhp@estgtw.estec.esa.nl, bandersen@solar.stanford.edu,  
bochsler@phim.unibe.ch, gnoci@solar.stanford.edu,  
gilbert.leppelmeier@fmi.fi,  
nsp.dnet!linmpi.dnet!schwenn@estgtw.estec.esa.nl,  
michels@maple.nrl.navy.mil, ipavich@umdsp.umd.edu,  
dmuhonen@istp2.gsfc.nasa.gov, worrall@istp2.gsfc.nasa.gov,  
Dino.Machi@ccmail.gsfc.nasa.gov, kwalyus@gsfcmail.nasa.gov,  
wwagner@leda.hq.nasa.gov, Ken.Sizemore@ccmail.gsfc.nasa.gov,  
svaghi@estec.esa.nl, cbwhite@gsfcmail.nasa.gov, cberner@estec.esa.nl,  
ffelici@estec.esa.nl, fvandenb@estec.esa.nl,  
kwenzel@estcs1.dnet.estec.esa.nl, mhuber@estec.esa.nl

Subject: SOHO SIM3, SWT15 and other meetings

X-Sun-Charset: US-ASCII

X-MX-Warning: VMS Mail To: line does not include all To: addresses

To SOHO PIs, members of SOWG  
copy PI2s, ESA/NASA distribution

Subject: 3rd Science Operations simulation, 15th SOHO SWT, other  
meetings

Dear Colleagues,

The following is to help plan your activities in the near future, and  
to try to avoid misunderstandings about dates.

#### 1. SIM3

The 3rd SIM will take place on the 7-11 August 1995

At this time most of the operations system will be in its final form,  
the EAF will be fully functional, the relatively short list of  
disfunctions that have occurred during SIM2 will have been corrected.  
The Instrument Work-stations (IWS) will have gone through two  
simulations and one Ground System Compatibility test and should be able  
to demonstrate full functionality. For IWSs of the NRT commanded

instruments we should expect that an educated but not necessarily expert should be able to execute the following procedures.

- a) Develop a unique observing sequence for a scientific objective (i.e. make a raster image in several spectral lines, make an image in a selected area in the field of view).
- b) Put several observing sequences into a group to form a study (i.e. images of bright points, images of prominences, etc)
- c) Put several observing sequences together to make a daily plan.
- d) Generate a complete set of commands and send them to the ECS.
- e) Generate a daily plan to be put into the SOHO daily plan.
- f) Generate a detailed as planned log that can be used to see what the instrument should be doing at what time.
- g) Generate an as-run log that can be used to see what was actually observed.
- h) We will play back data from GSCT2. Show that the IWS can capture, display, and put data into FITS files.

During the next three weeks we will put together a complete plan for the SIM3. Please comment and give suggestions. I would assume that the Science Planning/Science Operations Team will meet on Monday 7 August.

## 2. Science Working Team meeting (SWT 15)

I suggest that we hold it on the afternoons of the Wednesday and Thursday (9-10 August) during SIM3 (most of the PIs agree with this proposal). On Wednesday we would start with a review of the status of the instruments, by then delivered - what Phil calls an experiment readiness review, so that everybody knows how the other instruments are ready to perform. On Thursday we would concentrate on the spacecraft and mission. An item prominent in the agenda must be early operations - including commissioning. If short of time we can expand on Friday, or use the Thursday morning for splinter meetings.

3. As a reminder, the Flight Operations Review (FOR) will take place on 11-12 July at Marriott Hotel, 6400 Ivy lane, Greenbelt, Md.

4. On 13 July morning, following the FOR meeting, we like to have a meeting of the Public Relations Working Group, to which all PI's are invited and encouraged to attend. The aim is to discuss and agree the ESA and NASA plans for public relations activities, particularly after launch. We will come back to you with more details and an agenda in the near future.

Please, let me know your ideas and points that you like to be included in the agenda of the different meetings

Best wishes,

Vicente Domingo

From: MX%"vdomingo@so.estec.esa.nl" 12-JUL-1995 22:50:51.58  
To: MX%"sohoswt@solar.stanford.edu",MX%"cdp@astro1.bnsc.rl.ac.uk",MX%"galvin  
CC:  
Subj: SOHO science operations simulations

Return-Path: <vdomingo@so.estec.esa.nl>

Received: from dove (dove.so.estec.esa.nl) by UMDSP.UMD.EDU (MX V4.0-1 VAX)  
with SMTP; Wed, 12 Jul 1995 22:50:48 EDT

Received: from lynx by dove with SMTP id AA18998 (5.67b+/IDA-1.5 for  
<galvin@umdsp.umd.edu>); Thu, 13 Jul 1995 04:46:51 +0200

Received: by lynx id AA06144 (5.67b+/IDA-1.5); Thu, 13 Jul 1995 04:46:42 +0200

Date: Thu, 13 Jul 1995 04:46:42 +0200

From: Vicente <vdomingo@so.estec.esa.nl>

Message-ID: <199507130246.AA06144@lynx>

To: sohoswt@solar.stanford.edu, cdp@astro1.bnsc.rl.ac.uk,  
galvin@umdsp.umd.edu, ifkki.dnet!mueller\_m@estgtw.estec.esa.nl,  
gurman@uvsf.gsfc.nasa.gov, lumme@sara.cc.utu.fi, grec@ayalga.unice.fr,  
howard@maple.nrl.navy.mil, rbush@solar.stanford.edu,  
plemaire@solar.stanford.edu, Walter.Schmidt@fmi.fi,  
vanballe@cfa.harvard.edu, ajm@iac.es, poland@pal.gsfc.nasa.gov,  
cst@sdac.gsfc.nasa.gov, bfleck@so.estec.esa.nl,  
pmartens@so.estec.esa.nl, lsanchez@so.estec.esa.nl,  
elarduinat@ess-mail.atasc.allied.com, vdomingo@so.estec.esa.nl,  
mssl.dnet!jhp@estgtw.estec.esa.nl, 19709.dnet!JLC@estgtw.estec.esa.nl,  
dmuhonen@istp2.gsfc.nasa.gov, worrall@istp2.gsfc.nasa.gov,  
Dino.Machi@ccmail.gsfc.nasa.gov, sohofot@istp.dnet.estec.esa.nl,  
kwalyus@gsfcmail.nasa.gov, hschweit@istp.dnet.nasa.gov,  
svaghi@estec.esa.nl, cberner@estec.esa.nl, ffelici@estec.esa.nl,  
mhuber@estec.esa.nl, kwenzel@estcs1.dnet.estec.esa.nl,  
jmariska@solar.stanford.edu

Subject: SOHO science operations simulations

X-Sun-Charset: US-ASCII

X-MX-Warning: VMS Mail To: line does not include all To: addresses

To SOHO Principal Investigators and to members of the Science Operations Team  
cc: ESA/NASA

Subject: SOHO science operations simulations and end to end tests

Dear Colleague,

This is to you of the upcoming activities related to science operations  
including some updates.

2nd science operations simulation (SIM2)

-----  
We have sent by mail copies of the report on the 2nd simulation. They  
include reports by 1) SIM2 Evaluation Board, 2) GSFC Code 303, Systems  
Assurance Management, 3) Project Scientists Team.

3rd science operations simulation (SIM3)

-----  
You can find the schedule for the week and supporting information in  
the SOHO World Web pages under "SOHO Science Operations simulation 3".  
I attach a copy of them for completeness.

New information is:



From: MX%"pmartens@lion.nascom.nasa.gov" 3-JAN-1995 17:15:37.00  
To: GALVIN  
CC: MX%"vdomingo@lion.nascom.nasa.gov",MX%"cst@sdac.gsfc.nasa.gov",MX%"lsanc  
Subj: Second Ground System Compatibility Test

Return-Path: <pmartens@lion.nascom.nasa.gov>  
Received: from east.gsfc.nasa.gov by UMDSP.UMD.EDU (MX V4.0-1 VAX) with SMTP;  
Tue, 03 Jan 1995 17:15:35 EST  
Received: by east.gsfc.nasa.gov (5.57/Ultrix3.0-C) id AA08617; Tue, 3 Jan 95  
17:11:32 -0500  
Received: by lion (5.0/SMI-SVR4) id AA16867; Tue, 3 Jan 1995 17:11:05 -0500  
Date: Tue, 3 Jan 1995 17:11:05 -0500  
From: pmartens@lion.nascom.nasa.gov (Petrus C Martens)  
Message-ID: <9501032211.AA16867@lion>  
To: cbwhite@gsfcmail.nasa.gov, elarduinat@ess-mail.atasc.allied.com,  
vanballe@cfa.harvard.edu, walter.schmidt@fmi.fi,  
payne@solg2.bnsc.rl.ac.uk, rock@quake.stanford.edu,  
charra@iaslab.ias.fr, galvin@umdsp.umd.edu, lemaire@iaslab.ias.fr  
Subject: Second Ground System Compatibility Test  
CC: vdomingo@lion.nascom.nasa.gov, cst@sdac.gsfc.nasa.gov,  
lsanchez@lion.nascom.nasa.gov, poland@pal.gsfc.nasa.gov,  
kwalyus@gsfcmail.nasa.gov  
X-Sun-Charset: US-ASCII  
Content-Length: 1484

Dear Colleague,

A second ground system compatibility test (GSCT2) has been tentatively scheduled for 18-28 april 1995. This test will involve -- for the first time -- ALL experiments in an end-to-end test. The exact date has not yet been determined, but the April timeframe is a safe guess.

For scheduling of this test we need to have a first guess from you how much time you would like to have for NRT commanding of your instrument. Please note that this is NRT commanding only -- the FOT time needed to run their/your TSTOL Procedures is already accounted for. It is important to have your estimates for time requirements a.s.a.p., to impress upon the project the necessity of allowing for sufficient time, in an early phase of the preparations.

According to Chris StCyr it is quite likely that the ESA Project will require a test script from each of you detailing what commands will be sent from the EOF, so you should consider that as part of your planning.

I will be looking forward to your early reply, so that the schedule can be discussed in more detail at the upcoming SWT.

Please note that this message is sent by Piet Martens, and not, as you were used to, by Chris StCyr -- I will be gradually taking over Chris's jobs, as Chris will start as a member of the LASCO team. I hope I will be able to do as good a job as Chris has done over the last couple of years.  
THANK YOU CHRIS!

Yours sincerely,

Piet Martens

From: SDAC::CST "CHRIS ST.CYR/ATSC/SOHO/682/GSFC (301-286-2941)" 13-M  
To: UMDSP::GALVIN  
CC:  
Subj: Proposed schedule for GSCT#2 rehearsal

TO: SOWG  
FROM: C. St.Cyr and C. Cazeau  
DATE: 09 March 1995  
RE: PI team rehearsals for GSCT#2

Attached is our proposed schedule for the rehearsal activities prior to Ground System Compatibility Test #2 (GSCT#2), which is scheduled to begin 20 May.

Each PI team should plan to spend at least two days working with the FOT member (listed below) who has been assigned to their instrument. The activities will include review of the script and the TSTOL Procedures, and execution of those Procedures against the spacecraft Simulator. We will also want to exercise any near-realtime commanding scripts from the EOF during this rehearsal.

We believe that two days will be sufficient for each team, but we have left Friday open as a contingency day. If this schedule is not suitable for your team, please inform us immediately and we will try to accomodate change requests.

Since they are located near GSFC, the LASCO/EIT team have agreed to hold their rehearsal during the week of 17-21 April. We believe that GOLF and SWAN may require only one day since they participated in GSCT#1b. MDI also participated in GSCT#1b, but the TSTOL Procedures for that instrument are quite extensive.

Mon (24 Apr)	Tue (25 Apr)	Wed (26 Apr)	Thu (27 Apr)	Fri (28 Apr)
GOLF	MDI----->		CEPAC----->	
SWAN		CDS----->		
CELIAS----->		SUMER----->		
VIRGO----->		UVCS----->		

#### Flight Operations Team Instrument Assignments

LASCO/EIT - Chad Quach  
GOLF - Mark Hill  
SWAN - Chad Quach  
CELIAS - Brett Sapper  
VIRGO - Bud Benefield  
MDI - Roger Rowe  
CDS - Mark Hill  
SUMER - Travis Bailey  
UVCS - Brett Sapper  
CEPAC - Tom La Fave

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 13-APR-1995 19:33:27.37  
To: @SOWG  
CC: GALVIN  
Subj: gsct#2 and SIM2

TO CELIAS SOWG DISTRIBUTION,

The following are in answer to specific messages from Peter Wurz and Fredi Buergi, but are of interest to everyone.

Toni

Hi Peter,

I asked Chris StCyr about the socket availability for the upcoming tests. The Mission Planning Room (aka "overflow area" aka Conference room near the EOF) will be wired and ready for CELIAS, CEPAC, VIRGO, GOLF, and additional SWAN gear. They plan to have it ready for the rehearsal week for GSCT#2. (Rehearsals are the week of 24 April, and precede the SIM2). So whatever we would have available for launch, we will have next month. They are also getting the kitchen in shape.

Art Poland told me he is busy putting a "plan" together for the SIM2. The main emphasis (currently, anyway) is on daily science planning for the coronal instruments. StCyr says that they hope to keep the ground system functional testing (i.e., our sending commands and/or getting telemetry) to a minimum. So I think the two of us should be able to more than handle SIM2, as it is not clear there will be much for non-resident experiments to do. I guess the SOWG is still that Friday morning.

bye,

Toni

>From: MX%"WURZ@phim.unibe.ch" 13-APR-1995 02:29:54.13  
>To: MX%"BOCHSLER@phim.unibe.ch",MX%"galvin@umdsp.umd.edu"  
>CC: MX%"WURZ@phim.unibe.ch"  
>Subj:

>Dear Toni,

>To update your head count, I want to inform you that I shall come for the  
>week of SIM 2 tests. I will arrive on Saturday and stay for a week. Fredi  
>told me that he will be there the week before and somebody else too, so I  
>think there is enough CELIAS staff for the GSCT#2 rehearsal.

>Concerning connections I would think that we would need our four Ethernet  
>sockets again. I am planning to bring a lap top (to use as a terminal), and  
>I guess so do you. Including the EGSE we will use already three sockets and  
>if somebody else comes with a computer there is only one socket left.

>Best regards,

>Peter

\*\*\*\*\*  
\*\*\*\*\*

Hi Fredi,

OK, there seems to be some confusion here.

IWS commanding: Commanding via the IWS is for near realtime, or else is a request for commanding by the FOT. For IWS NRT commanding we just send our commands by typing them in to the command mode of the IWS. This is one command at a time and is what we tested in last year's SIM. (Note, do not expect the pre-existing GSE command buttons to work "as is" -- Thomas Hauck, Peter Wurz, and I tried that at last November's SIM1. There is a format change that is required, also right now all the existing buttons correspond to a binary command structure, and as a team we decided at the Portsmouth Co-I meeting "no binary commands will be used for safety reasons".) (We should probably test the option of binary, even if we never plan to use it.) It is good to script this out, as I think any procedures should be written down first, with the expected response, but the NRT script is for our own use as far as I know. However, I am sure that the FOT would like to know what to expect.

FOT commanding. If we have pre-existing procedures that we would like the Flight Operations Team to send for us, then they will take our "plain language" script and THEY will make it into a STOL procedure. You and I gave the FOT an edited version of the "OBS" procedure to work with last fall, and Brett Sapper of the FOT has been translating it into STOL. I also gave him some procedures to write up for turning On and Off the DPU for main and redundant (this makes up 4 procedures!), just so they can do that before/after we do any real-time IWS commanding. I had hoped to do more FOT procedures, but it is unclear what we want them to do versus what we plan to do for ourselves with near-realtime commands. FOT STOL procedures are not implemented by us, but are requested by us for implementation by the FOT. The FOT then fits the request into their available timeline for sending commands. If I understand the set-up correctly, after launch (not testing) this will often be at the start of the "work day" before resident experiments take over with the real-time commanding from their IWS's.

I have received a copy of the CELIAS GSCT#2 package from Brett Sapper. It arrived late last week, while I was out of the office (Ulysses SWT in Kiel, then some other out-of-office activities), so frankly, I only found it in my mail pile today. I will have Cassie FedEx you the 30 odd pages tomorrow, as I assume you will not be working Easter weekend anyway. I will also have a copy FedEx'd to Reiche.

The script for the GSCT#2 includes

- (1) Submit (for later execution by FOT) delayed commanding for CELIAS.
- (2) Power on CELIAS
- (3) Run the FOT procedure for OBS mode
- (4) Exercise CELIAS NRT commanding (from the IWS). I do not know how much time we will be allotted for this activity - i.e., how many commands we will be sending, but this is where we, the experimenter, directly command from the CELIAS workstation (IWS) during our time slot. For MTOF, we want to execute the new auto-calibration sequence, and Fred Ipavich has promised that he and Bedini will talk to me about it soon. However, we may need Reiche's input on the actual MTOF commands.
- (5) Submit (for execution by FOT) a Remote Command Request, RCR, for CELIAS. An RCR is a request to the FOT to execute a "predefined command sequence" or PCS. Definition and approval of PCS's are directly coordinated between the FOT and the experimenter. We have never tested, nor written, one of

these, so this should be fun.

- (6) Submit (for execution by the FOT) a Remote Procedure Request, RPR, for CELIAS. An RPR is a request to the FOT to execute a FOT-approved pre-existing STOL procedure. Since we only have the OBS procedure available (other than turning ON/OFF the DPU procedures), I suppose we will re-submit the OBS.
- (7) Submit Large Instrument Table Load for CELIAS through a Background Queue request. I do not think CELIAS has table loads (in the sense meant by this command option), at least that is what I gathered from earlier conversations with Häuck and Reiche about this option. (This item obviously has "ask Reiche" written all over it.)
- (8) Disable near realtime commanding for CELIAS.
- (9) Power off CELIAS STOL procedure is run by the FOT.
- (10) Power on CELIAS STOL procedure is run by the FOT for the redundant side
- (11) FOT executes OBS STOL procedure.
- (12) Power off CELIAS STOL procedure for redundant side, run by FOT.

THE END.

Toni

P.S. you could not reach me by phone, because I actually got up early to go to NASA HQ.

P.S2. There should be people around on the 26th to discuss WIND, but if you want Gloeckler specifically, let us know, as he oftens works at home and may not be planning to come in per se. Paquette, the science programmer will be in. Let me know who else would you want to talk with (i.e., Doug Hamilton for MASS, or Fred Ipavich for SWICS, or me for STICS), or the type of discussion, and I will try to round people up.

>From: MX%"buergi@mpe-garching.mpg.de" 13-APR-1995 06:14:06.16  
>To: MX%"galvin@umdsp.umd.edu"  
>CC: MX%"reiche@ida.ing.tu-bs.de",MX%"gruenwaldt@linmpi@mpe.mpe-garching.mpg.  
>Subj: SOHO GSCT-2 rehearsal

>Dear Toni

>I have tried to call you on the phone, but you were not there.  
>My current ideas about the GSCT are the following:

>We want to carry out a full SFT (maybe excluding the boring bit with the  
>many combinations of sensors in verify) PLUS some additional tests with the  
>commands that overwrite the classification tables.

>I will try to set up a script for this, since I already have the SFT on my  
>PC, but I have no idea whatsoever what the TSTOL format should look like.  
>Could you enlighten me?

>As far as I know, the following people will attend the GSCT-2 rehearsal  
>with CELIAS on 24.-25. April:  
>Bornemann, Buergi, Galvin and Reiche.  
>There will be nobody from CTOF. Peter Wurz will come for the SIM-2 in the

>following week, but not the GSCT rehearsal.

>Walter Bornemann and myself plan to arrive on Fri. 21. and leave on Wed. 26.

>We will stay at the Greenbelt Holiday Inn.

>Please let me know before Wed. 19. if these plans conflict with the Goddard  
>schedule.

>With best regards

>Fred

>PS.

>I would like to come to UMD to discuss WIND matters on Wed. 26. if that is  
>possible. Will anybody be there?

>PS2.

>MPE will be closed over Easter until Tue. 18.

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 20-APR-1995 18:24:41.71  
To: ECD1::LINMPI::LINAX1::GRUENWALDT  
CC: @SOWG,GALVIN  
Subj: RE: dress rehearsal for GSCT2 coming up 24-25 April

Dear CELIAS SOWG colleagues,

I received a request from Heiner Gruenwaldt about upcoming flight operations tests for SOHO. Since this is of general interest, I am replying to all.

The calender information on upcoming SOHO events is available through the World Wide Web Homepage for SOHO, which has the URL address of

<http://sohowww.nascom.nasa.gov/>

If you then go to the "meetings" subsection, there is a lot of s/c and flight operations calender information.

Remembering that all dates are tentative, the following is a synopsis of the flight ops tests:

- April 24-25 : the CELIAS rehearsal for the upcoming GSCT#2, where we will meet with our CELIAS-FOT contact to straighten out any FOT displays, procedures, etc problems.
  - May 1-5 : SIM2, the Second Science Operations Simulation, which may not have much to do with CELIAS, as I have been told that it will emphasize coronal instrument daily planning. But I have not received an agenda yet.
  - May 20 - June 2: Ground System Compatibility Test #2, in which we will send real commands to a real s/c.
  - July 10 -14 : SIM3. This includes testing out the EAF facilities. I have no specific information on this test, but some experimenters have recommended that instead of working on daily planning sessions for the coronal instruments, we may want a dry run for instrument commissioning. I assume the purpose of SIM3 will be discussed at the May 5th SOWG.
- From July to August the s/c gets packed up and sent to the Cape.
- Aug 28- Sept 9 : s/c SFT at KSC. This is not a Flight ops test, but I thought you would be interested.
  - Sept 17 - 19: : GSCT #3 . I do not have specifics, but this should again be real commands to a real s/c.
  - Oct 4-6 : End to end testing.

All dates are of course subject to change.

best regards,

Toni

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 10-JUN-1995 17:19:26.79  
To: @SOWG  
CC: BEDINI,LASLEY,GALVIN  
Subj: upcoming GSCT2 tests for Celas

TO: Fredi Buergi  
CC: Dieter Hovestadt  
Lead Co-Is

Dear Fredi,

I received your fax on the script for this coming week.

On Tuesday, we performed the STOF table load command file, using a one second delay. It took about three trys. It eventually worked after the FOT inserted a 3 second delay (on their end, not ours). I understand that they think this has to do with the phone connection in Toulouse.

On Wednesday, I went to Goddard and spoke to Brett Sapper and Carline Cazeau about the script proposed in your fax. Carline agreed in principle to the use of the redundant side for one day or other of the testing, and said she would negotiate this matter with Matra. In today's meeting (Saturday), this request was confirmed -- on Monday we will try out the FOT procedures for ON and OFF on the CELIAS redundant side.

I also left Carline the proposed scenario for the ESR test (for next Wednesday). She again agrees in principle, but again needs to get MATRA consent. This is because Matra will do the actual set up of the experiments before the ESR test - the FOT are not planning on sending the sensor commands from here at Goddard. I think we will get it - at least so far everyone has been very cooperative.

I have submitted Delayed command files for both Monday and Tuesday. Just the FBDUMMY commands.

I will use the Verify modes for the Monday tests.

I can manually (i.e., by typing in the commands myself) do the Diagnostic procedures on Tuesday. Because this is an NRT Commanding test, not a Remote Procedure Request test, my use of RPR will be very limited. I have spoken to Carline and Eliane Larduinat, and a couple of the FOT members about the use of RPRs. I am told I can do this, but only if the entire procedure takes less than 3 minutes. I do not think any of our procedures are that short - they were designed for safety, not speed. (Maybe you can check with the command log how long they took last week.) The reason we cannot use long procedures during the NRTCommanding test is simple - whenever a procedure is run by the FOT, the NRT Commanding is disabled until the procedure is finished. Since this is a combined NRT commanding period for all experiment groups, we cannot monopolize the link.

I do not see any problem with my running the commands manually, but since the CTOF procedure contains High Voltage -related commands, and the STOF procedure contains bias commands, I just want the Lead Co-Is to be aware of what I will be doing.

Best regards,

Toni



From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 13-JUN-1995 16:09:28.45  
To: @SOWG  
CC: GALVIN  
Subj: celias activities for 13June95 gsct#2

To: Fredi Buergi and Dieter Hovestadt  
CC: CELIAS Lead Co-Is (SOWG distribution list)  
Date: 13 June 1995

The DPU HK showed a parity error sometime between 0656 and 0917 GMT (based on what printouts are handy from when sensors were all OFF to all in SB). A second parity error is seen on a printout for the MTOF verify mode at 0932 GMT.

#### First NRT session on 13 June 1995

13June95	0858 GMT	FBMMOD1I	MTOF standby
	0907	FBSMOD1I	STOF standby
	0908	FBCMOD1I	CTOF standby
	0928	FBMMOD3I	MTOF verify
	0933	FBSMOD3I	STOF verify
	0940	FBCMOD3I	CTOF verify
	1032	FBMMOD1I	MTOF standby
	1033	FBMMOD4	MTOF autocal
	1038	FBSMOD1I	STOF standby
	1039	FBCMOD1I	CTOF standby

At the time that the command went in for mtof autocal, the dpu idle time went to almost zero, and stayed there for a few minutes before returning to nominal values. The dpu seemed to be recalculating tables or something. I assume that is normal?

#### Second NRT session:

13June95	1211	FBMMOD1I	MTOF standby
	1215		verify stof in standby
	1216	FBSMOD2I	STOF manual
	1218	FBSLIMBI,0x0AD2	set SSD bias limit to 210, delta to 10.
			this command uplinked successfully, but the STOF limits screen showed SSD Bias limit = 80, delta = 10
	1223		resent above command
			SSD Bias limit = 210 delta = 10
	1226	FBSNASB	SSD bias enabled
	1228	FBSSBON	SSD bias on
	1230	FBSSBV,0x00CA	Set bias volt step 202
			SSD Bias volt = -91.55
	1234	FBSMOD4	STOF autocal

with the command that I had trouble with, I confirmed that I had sent it correctly. Perhaps it takes some time to implement? If it only

starts on a science record, I may not have waited long enough.

Data link dropped out at 13:33 GMT, one hour into the STOF autocal.  
Data link re-established at 14:14 GMT.

13June95	1429	FBCCTRL,0x0021	set HVPS red/off, VVPS off (CTOF)
	1433	FBCENA	enable HV (CTOF)
	1436	FBCLIMITHV,0x0000	set HVPS limit (HVPS limit = 0, delta = 0)
	1439	FBCHVPS,0x0007	set hvps stp 7
	1442	FBCMOD4	ctof autocal

Data link lost at 14:39 GMT. Decided to start turning things  
to standby/off since no visibility.

1451	FBMMOD0I	MTOF off
1457	FBSMOD1I	STOF standby

Telemetry regained, but other teams claimed that  
they were getting partial packets.

1526	FBCMOD1I	CTOF standby
1527	FBSMOD0I	STOF off
1530	FBCMOD0I	CTOF off

NRT link closed at 1545.

Warm turn on 1623 GMT. Switch to low bit rate. Received OBT  
at about 1745 GMT. Later returned to normal (medium) bit rate.

Delayed command file (3xFBDUMMY) sent at 1900 GMT. Cmd cnt  
incremented by 3.

Experiment turn off by Matra 1939 GMT.

Tomorrow is the ESR test.

Toni

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 14-JUN-1995 06:26:43.96  
To: @SOWG  
CC: GALVIN  
Subj: celias esr test results. Note MPE and ECD1 nodes are down.

To: Fredi Buergi and Dieter Hovestadt  
CC: CELIAS Lead Co-Is (SOWG distribution list)  
Date: 14 June 1995

MATRA turn on procedure CLS\_ON was begun at 14 June95 0550.

14June95	0552	CELIAS ON
		Celias turned on in one try, MPB 1
	0558	OBT command
	0559	FBPERM,0x0301
	0559	FBCESRON esr = standby

(mistake in data base has power off/standby esr commands switched)

Note: the default (turn on) value for ESR message was "Power OFF". This later changed to "Standby". I am pretty sure the command counter incremented by two at the time of the change in ESR status (not at the time the commands were sent). Is that delay appropriate?

The Matra telemetry data base has ESR messages messed up. They interpret raw value of 0x0001 as STANDBY, and 0x0002 as "POWER OFF". My copy of the Digital Status Defn Table (TUB IDA 25/04/95 version 5.2) says the opposite (FDDESRD: 0 = disabled, 1 = power off, 2 = standby).

Yesterday, the ESR message never changed from "Power OFF" status. This may indicate a problem. Yesterday, I had seen the command counter increment by two some few minutes after the initial turn on. (That is to say, that the command OK counter was = 1 after the OBT, then later it changed to = 3). Since earlier, someone had come around from the FOT saying that the some experiments would be getting the OBT again, I had assumed that was the reason for the command counter. After I received the inquiry yesterday from Matra regarding the ESR message status, I asked the Matra representative here at GSFC whether or not the new CLS\_ON had been used, which includes the time tag FBPERM,0x0301 and ESR response FBCESRON, and he thought not. Now I am questioning that, as the command count increment by 2 today would match the two commands. IF THE COMMANDS WERE SENT YESTERDAY, then the DPU received them but did not implement them. The major difference that I see between yesterday and today is that the DPU required two power-ons yesterday and ended up in MPB 2 (today it is in MPB 1).

NRT session on 14 June 1995 to configure for ESR test.

14June95	0726 GMT	FBCMOD1I	CTOF standby
	0730	FMMOD1I	MTOF standby
	0741	FBCMOD3I	CTOF verify

Sometime at or after the MTOF to standby command, the parity error count went to 1. To see whether or not this was coincident with the MTOF mode change, the following commands were sent.

0750 GMT  
0751

FBMMOD3I  
FBMMOD1I

MTOF verify  
MTOF standby

As soon as the MTOF verify command went through, the parity error count went to 2. Returning to standby did not affect the error count (i.e., it stayed at 2).

14June95            1002 GMT            ESR sent - loss of telemetry

When the low bit rate telemetry became available, the CELIAS status was not as expected.

Command OK Counter incremented by one.	> That's GOOD.
ESR MESSAGE still reads Standby.	> Unchanged.
STOF POWER OFF	> Unchanged.
MTOF POWER OFF	> Should be Standby!
CTOF POWER OFF	> Should be Standby!

The PDU display shows a current of 0.077, consistent with only having the DPU on.

Either the FBCESTRON command really is the Power Off command and the ESR Message status is WRONG in the GSE display (FM 5.06), or the DPU does not function as advertised. It is currently 1022 GMT, so unless the DPU takes longer than 20 minutes to activate Standby mode, this is it.

The DPU will remain on for until 3 pm local time (1900 GMT), when all experiments will be turned off by Matra. Then there will be a debriefing meeting at 4:30 pm (1.5 hours to get ready for it).

Toni

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 14-JUN-1995 17:24:30.31  
To: @SOWG  
CC: GALVIN  
Subj: end of gsct#2

To: Fredi Buergi and Dieter Hovestadt  
CC: CELIAS Lead Co-Is (SOWG distribution list)  
Date: 14 June 1995

The CELIAS off procedure was performed by Matra at 1932 GMT.  
This is the end of GSCT#2.

I have explained to the Matra representative about the mixups in the GSE vs. data base values for the ESR mnemonics. The Matra representative has asked that a new fax be sent to them explaining the ESR data base problems, since the fax sent yesterday by Fredi to Gardelle and Bories said just the opposite, but has now been found to be inconsistent with our observations. This is to prevent Matra from changing the data base in response to the first fax. Fredi - maybe you can handle this when you get to Matra, or you can send an updated fax?

I think it would be very useful if Kay updated the data base lists and sent me a copy. I know that in addition to the ESR problems, there is also an STOF command that needs to have the number of data words changed. Also Peter Bedini has some changes to make to the conversion curves for some of the MTOF data, and this has to be submitted to MATRA. I can cross-check the Goddard version 7 data base when it comes out, but not if the data base I have has errors.

I also explained how the DPU may have failed to implement the same ESR command yesterday that worked today. I asked to get a copy of the MATRA control file for yesterday so that we can see if the time delay command was sent too late for an implementation in the first set of science records, vs. having to wait 21 hours for implementation. If that turns out to be the case, perhaps a longer time delay would be appropriate. Even today, with no multiple DPU starts required, it took 9 minutes from the DPU turn on until Matra sent the FBPERM command. If the current time clock only allows for a 15 minute window, I can see where multiple DPU turn ons could easily make one miss it. This was reported by Matra as an anomaly, so I guess a formal response may be needed to close it.

Fredi - thanks for writing the CELIAS test summary report.

Another note: NASA now requires home addresses for accreditation purposes. The following CELIAS people need to send this information to Jean Desselle at GSFC, fax 301-286-0218.

BERN: Aellig, Balsiger, Bochsler, Fischer, Hefti,  
Kallenbach, Wurz

MPAE: Gruenwaldt, Winterhoff, Goll, Clette, Esser

This is for access into GSFC (not the KSC list, which is separate). Fredi sent out a fax about it several months ago. Jean does not have any names for MPE or TUB, which I think is odd -- if you think you are coming to GSFC for the CELIAS

commissioning, I suggest you may have to re-submit the information.

Bye,

Toni

From: MX%"cst@sdac.gsfc.nasa.gov" 23-MAY-1995 17:49:13.53  
To: MX%"bpotter@gsfcmail.nasa.gov",MX%"rmenrad@gsfcmail.nasa.gov",MX%"jwelch  
CC:  
Subj: GSCT#2

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Tue, 23 May 1995 17:49:11 EDT

Date: Tue, 23 May 1995 17:45:25 -0400

Message-ID: <95052317452589@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: bpotter@gsfcmail.nasa.gov, rmenrad@gsfcmail.nasa.gov,  
jwelch@gsfcmail.nasa.gov, jmckim@bigsim.atsc.allied.com,  
vdomingo@soho.estec.esa.nl, lsanchez@soho.estec.esa.nl,  
bfleck@soho.estec.esa.nl, pmartens@lion.nascom.nasa.gov,  
kim@ecsman.nascom.nasa.gov, whitec@thorin.atsc.allied.com,  
cazeau@thorin.atsc.allied.com, elarduinat@ess-mail.atsc.allied.com,  
rock@quake.stanford.edu, scott@quake.stanford.edu,  
CHEVALIER@sag.space.lockheed.com, walter.schmidt@fmi.fi,  
michel.berthe@aerov.jussieu.fr, curdt@linax1.dnet.gwdg.de,  
howard@maple.nrl.navy.mil, scott@argus.nrl.navy.mil,  
wang@cedar.nrl.navy.mil, eit@xanado.nascom.nasa.gov,  
mueller-mellin@kernphysik.uni-kiel.d400.de, lumme@sara.utu.fi,  
galvin@umdsp.umd.edu, wurz@phim.unibe.ch, buergi@mpe-garching.mpg.de,  
petrou@sapvvg.saclay cea.fr, cfrohlich@ezrz1.vmsmail.ethz.ch,  
fgr@ll.iac.es, jhl@iac.es, harrison@solg2.bnsc.rl.ac.uk,  
payne@solg2.bnsc.rl.ac.uk, cdp@astrol.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov

Subject: GSCT#2

X-VMS-To: @SOWG

X-MX-Warning: VMS Mail To: line does not include all To: addresses

TO: SOWG

FROM: C. St.Cyr

DATE: 23 May 1995

Here are a few thoughts about the upcoming GSCT#2 activities, from an  
EOF perspective. I have not taken time to structure them, so please  
feel free to ask questions.

As of this writing, here is my (UNOFFICIAL!) schedule:

29 May (Mon)	Day 0	FOT orientation for ESA and Matra
30 May (Tue)	Day 1	AOCS (36 hours continuous)
31 May (Wed)	Day 2	AOCS, VIRGO
01 Jun (Thu)	Day 3	LASCO/EIT, SWAN
02 Jun (Fri)	Day 4	DHSS/COBS, CELIAS
03 Jun (Sat)	Day 5	CEPAC, Thermal
04 Jun (Sun)		No testing
05 Jun (Mon)		No testing
06 Jun (Tue)	Day 6	CDS
07 Jun (Wed)	Day 7	CDS
08 Jun (Thu)	Day 8	MDI
09 Jun (Fri)	Day 9	MDI, SUMER
10 Jun (Sat)	Day 10	AOCS, GOLF
11 Jun (Sun)		No testing
12 Jun (Mon)	Day 11	DHSS/COBS, 1.6-hour pass, IIDE, ECS verification
13 Jun (Tue)	Day 12	8-hour pass, simultaneous NRT
14 Jun (Wed)	Day 13	AOCS, ESR

As you are aware, the GSCT#2 activities take place during Toulouse business hours. The test is scheduled for 11 hours each day, with an additional hour available for contingency. The daily schedule is:

(All times Local GSFC)

01:00	Pre-test briefing and configuration check
02:00	Testing activities begin
09:00	Status briefing during FOT shift hand-over
14:00	Testing activities end
15:30	End of day briefing; replanning for next day

To support the experiment teams in the EOF we will operate in two shifts. From 01:00-09:00, Bill Potter and I will be available to operate the ECS and to assist the experiment teams. From 08:30-16:00 Eliane Larduinat, Piet Martens, and Luis Sanchez will staff the SOC office. The ECS developers and System/Network Administrators will be available on-call.

Based on the experience of GSCT#1 and GSCT#1b, the 15:30 end-of-day briefing is the most important. That is where any replanning of future activities occurs.

Other EOF residents will also be available to help the PI teams. These people include Dominic Zarro, Liyun Wang, Bill Thompson, Donald Luttermoser, and Snehavadan Macwan.

On another topic, each PI team should pick up a copy of the latest Flight Operations Plan from the FOT secretary (Donna Hammer).

Also of interest, each PI team should plan to meet with the Simulator development team during their visit to Goddard. John Welch and John McKim are the two people who you need to meet with, and Eliane or I can coordinate the arrangements for those meetings.

-- end of rambling --



From: MX%"cst@sdac.gsfc.nasa.gov" 31-MAY-1995 02:00:45.70  
To: MX%"vdomingo@soho.estec.esa.nl",MX%"lsanchez@soho.estec.esa.nl",MX%"bfle  
CC:  
Subj: GSCT#2 Day 1 Summary

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Wed, 31 May 1995 02:00:43 EDT

Date: Wed, 31 May 1995 01:54:51 -0400

Message-ID: <95053101545163@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: vdomingo@soho.estec.esa.nl, lsanchez@soho.estec.esa.nl,  
bfleck@soho.estec.esa.nl, pmartens@lion.nascom.nasa.gov,  
kim@ecsman.nascom.nasa.gov, elarduinat@ess-mail.atsc.allied.com,  
rock@quake.stanford.edu, scott@quake.stanford.edu,  
walter.schmidt@fmi.fi, curdt@linax1.dnet.gwdg.de,  
howard@maple.nrl.navy.mil, scott@argus.nrl.navy.mil,  
wang@cedar.nrl.navy.mil, eit@xanado.nascom.nasa.gov,  
mueller-mellin@kernphysik.uni-kiel.d400.de, lumme@sara.utu.fi,  
galvin@umdsp.umd.edu, wurz@phim.unibe.ch, buergi@mpg-garching.mpg.de,  
petrou@sapvxxg.saclay.cea.fr, cfrohlich@ezrz1.vmsmail.ethz.ch,  
fgr@lliac.es, harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: GSCT#2 Day 1 Summary

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

From: SMTP%"/I=D/G=KEITH/S=WALYUS/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x40  
To: /DD.UN=SOHOSIT/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400.gsfc.nasa.g  
CC:  
Subj: GSCT-2 Summary for Test Day 1

GSCT-2 Summary for Test Day 1 (May 30)

- FOT testing began at 03:40 (local), which was one hour and forty minutes later than planned. The start of the test was delayed by the failure of the SCOE (spacecraft operational environment), which is located at Toulouse, France. MMS personnel are examining the problem and are not yet able to state when the SCOE will be ready, although it will not be earlier than Thursday (June 1). The FOT tested for 8.5 hours on day 1.

- The original test script planned for testing the L&EO scenario and other AOCS activities for 48 continuous hours beginning on Monday morning and completing on Wednesday morning. Since these activities require the use of the SCOE, they will be postponed until later in the test.

- In place of the L&EO and AOCS activities, the FOT substituted activities which did not require the SCOE. These activities included: ACU memory write and compare; thermal activities, not including the reconfiguration recovery; and two of the five polarity checks.

- Mondays test day completed at 14:00. With the postponement of the L&EO and AOCS activities, the 48 hour test will be postponed to a later date during the test. Because of the SCOE failure, MMS engineers have stated that 3 extra test hours may be available per day if required by the FOT. The Project has stated that the FOT will use the extra time

if available, but MMS must notify the Project by the mid-shift briefing on the previous day to allow the FOT time to schedule their personnel.

- Test scenarios for the remainder of the week are still very fluid due to the uncertainty of the SCOE, and the uncertainty as to whether the PIs will be available earlier for testing their instruments than previously planned.

#### TENTATIVE PLANS FOR TEST DAYS 2-4

Wednesday: The FOT will test the VIRGO and LASCO instruments. To complete testing on the two instruments, the FOT will require 13.5 hours of test time. MMS will check tomorrow to see if the extra 2.5 hours of test time can be allocated. If the extra time can not be allocated, LASCO will not be fully tested, and the FOT will have to re-do some of the LASCO testing in addition to completing the remaining LASCO segments. MMS personnel will know by 03:00 (local) if the extension is possible.

Thursday: The FOT will test SWAN, and CELIAS or CDS. Additionally the FOT will assist MMS in trouble-shooting of the SCOE.

Friday: If the SCOE is ready, the FOT will test the L&EO scenario for 36 hours, and finish the 12-hour AOCs activities the following week. If the SCOE is not working, the FOT will continue testing CDS and CELIAS. MMS has proposed moving the start of day four activities up four hours to 22:00 on Thursday to provide extra margin for testing the L&EO sequence if the SCOE is ready. NASA Project has the action to determine if NASA can support an earlier start time.

===== RFC 822 Headers =====

X400-Received: by mta wheelo.gsfc.nasa.gov in /PRMD=NASA/ADMD=TELEMAIL/C=US/;  
Relayed; Tue, 30 May 1995 16:22:33 -0400

X400-Received: by /PRMD=gsfc/ADMD=telemail/C=us/; Relayed;  
Tue, 30 May 1995 16:16:00 -0400

Date: Tue, 30 May 1995 16:16:00 -0400

X400-Originator: /I=D/G=KEITH/S=WALYUS/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@

X400-Recipients: non-disclosure;;

X400-MTS-Identifier: [/PRMD=gsfc/ADMD=telemail/C=us/;ZJJF-1827-3039/15]

X400-Content-Type: P2-1984 (2)

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cst@sdac.gsfc.nasa.gov, Robert\_O'Brien@ccmail.gsfc.nasa.gov,  
Ralph.Viehman@ccmail.gsfc.nasa.gov, Michael.Richter@gsfc.nasa.gov,  
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Subject: GSCT-2 Summary for Test Day 1

From: MX%"cst@sdac.gsfc.nasa.gov" 1-JUN-1995 01:30:16.04  
To: MX%"vdomingo@soho.estec.esa.nl",MX%"lsanchez@soho.estec.esa.nl",MX%"bfle  
CC:  
Subj: Day 2 summary

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Thu, 01 Jun 1995 01:30:13 EDT

Date: Thu, 1 Jun 1995 01:10:18 -0400

Message-ID: <950601041101861@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: vdomingo@soho.estec.esa.nl, lsanchez@soho.estec.esa.nl,  
bfleck@soho.estec.esa.nl, pmartens@lion.nascom.nasa.gov,  
kim@ecsman.nascom.nasa.gov, elarduinat@ess-mail.atsc.allied.com,  
rock@quake.stanford.edu, scott@quake.stanford.edu,  
walter.schmidt@fmi.fi, curdt@linax1.dnet.gwdg.de,  
howard@maple.nrl.navy.mil, scott@argus.nrl.navy.mil,  
wang@cedar.nrl.navy.mil, eit@xanado.nascom.nasa.gov,  
muellemellin@kernphysik.uni-kiel.d400.de, lumme@sara.utu.fi,  
galviumumdsp.umd.edu, wurz@phim.unibe.ch, buerger@pe-garching.mpg.de,  
petrou@sapvixg.saclay.cea.fr, cfrohlich@ezrz1.vmsmail.ethz.ch,  
fgr@ll.iac.es, harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: Day 2 summary

X-VMS-To: @[CST.SOHO.GSCT2]SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

From: SMTP%"/I=D/G=KEITH/S=WALYUS/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x40  
To: /DD.UN=SOHOSIT/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400.gsfc.nasa.g  
CC:  
Subj: GSCT-2 Summary for Test Day 2 (May 31)

GSCT-2 Summary for Test Day 2 (May 31)

- FOT testing began at 02:08 (local), and completed at 14:08. The testing was extended two hours to accommodate LASCO testing.
- During LASCO testing, an anomaly occurred when a large instrument table load was rejected by the spacecraft. The signature of this error is similar to errors witnessed during GSCT-1 and GSCT-1B. The FOT and MMS engineers are analyzing the problem, and will devote two hours of spacecraft time tomorrow to further study the problem. It is anticipated that this problem may occur again during the test.
- The FOT will support MMS engineers in analyzing the SCOE problem on Thursday. MMS engineers estimate that this support will require one hour of test time. Although the SCOE is not yet working, the test team has replanned the agenda such that the SCOE will not be required until next week, which will allow MMS engineers more time to correct the problems without adversely affecting the simulation.
- The tentative schedule through June 10 is listed below. Except for six hours of AOCS testing and two hours of testing a warm start-up, all activities have been accounted for in the schedule. Days 11-13 (June 12-14) have not changed from the original baseline schedule. All days have the nominal 11 hour schedule unless otherwise noted.

Tentative Schedule of Test Days 3-10 (May 31-June 10)

Test Day 3 (May 31) (13.5 hours)

- Thermal reconfiguration
- SWAN
- OBT
- SSR
- LASCO
- Large instrument table load commands and trouble shooting

Test Day 4 (June 1)

- CELIAS
- CEPAC

Test Day 5 (June 2)

- Polarity Check
- CDS

Test Day 6 (June 6) (14 hours)

- CDS

Test Day 7 (June 7) (15 hours)

- MDI
- GOLF

Test Day 8 (June 8)

- MDI
- SUMER

Test Day 9-10 (June 9-10)

- 36 hour continual L&EOP Sequence

===== RFC 822 Headers =====

Return-Path: /I=D/G=KEITH/S=WALYUS/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400

Received: by sdac.gsfc.nasa.gov (UCX V3.2-A AXP)

Wed, 31 May 1995 17:49:51 -0400

X400-Received: by mta wheelo.gsfc.nasa.gov in /PRMD=NASA/ADMD=TELEMAIL/C=US/;

Relayed; Wed, 31 May 1995 17:49:39 -0400

X400-Received: by /PRMD=gsfc/ADMD=telemail/C=us/; Relayed;

Wed, 31 May 1995 17:43:00 -0400

Date: Wed, 31 May 1995 17:43:00 -0400

X400-Originator: /I=D/G=KEITH/S=WALYUS/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@

X400-Recipients: non-disclosure;;

X400-MTS-Identifier: [/PRMD=gsfc/ADMD=telemail/C=us/;AJJF-1827-3716/15]

X400-Content-Type: P2-1984 (2)

From: /I=D/G=KEITH/S=WALYUS/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400.gsfc.n

Message-ID: <AJJF-1827-3716/15\*@MHS>

To: /DD.UN=SOHOSIT/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400.gsfc.nasa.gov,  
cst@sdac.gsfc.nasa.gov, Robert\_O'Brien@ccmail.gsfc.nasa.gov,

Ralph.Viehman@ccmail.gsfc.nasa.gov, Michael.Richter@gsfc.nasa.gov,

/DD.UN=DPERKINS/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400.gsfc.nasa.gov,

/DD.UN=VOXENHAM/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400.gsfc.nasa.gov,

/DD.UN=JBRUNER/O=GSFCMAIL/PRMD=GSFC/ADMD=TELEMAIL/C=US/@x400.gsfc.nasa.gov

Subject: GSCT-2 Summary for Test Day 2 (May 31)

From: MX%"cst@sdac.gsfc.nasa.gov" 2-JUN-1995 02:21:50.17  
To: MX%"vdomingo@soho.estec.esa.nl",MX%"lsanchez@soho.estec.esa.nl",MX%"bfle  
CC:  
Subj: FWD of K. Walyus GSCT#2 Day 3 Summary

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Fri, 02 Jun 1995 02:21:47 EDT

Date: Fri, 2 Jun 1995 02:13:26 -0400

Message-ID: <95060202132685@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: vdomingo@soho.estec.esa.nl, lsanchez@soho.estec.esa.nl,  
bfleck@soho.estec.esa.nl, pmartens@lion.nascom.nasa.gov,  
kim@ecsman.nascom.nasa.gov, elarduinat@ess-mail.atsc.allied.com,  
rock@quake.stanford.edu, scott@quake.stanford.edu,  
walter.schmidt@fmi.fi, curdt@linax1.dnet.gwdg.de,  
howard@maple.nrl.navy.mil, scott@argus.nrl.navy.mil,  
wang@cedar.nrl.navy.mil, eit@xanado.nascom.nasa.gov,  
muellemellin@kernphysik.uni-kiel.d400.de, lumme@sara.utu.fi,  
galvin@umdsp.umd.edu, wurz@phim.unibe.ch, buergi@mpg-garching.mpg.de,  
petrou@sapvxg.saclay cea.fr, cfrohlich@ezrz1.vmsmail.ethz.ch,  
fgr@ll.iac.es, harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: FWD of K. Walyus GSCT#2 Day 3 Summary

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

GSCT#2 Summary for Test Day 3 (june 1)

- FOT testing began at 02:10 (local) and completed at 14:30. The testing was extended a half hour to accomodate LASCO testing.
- MMS engineers have reported that the SCOE has been fixed and is ready for use. The FOT will test 3 hours of AOCS procedures during the afternoon of Day 4. If problems reoccur with the SCOE, the FOT will be ready to continue LASCO as a back-up plan.
- Test Day 4 will be extended four hours to account for the added AOCS testing.
- The tentative schedule through June 10 is listed below. Except for three hours of AOCS testing and three hours of LASCO testing, all activities have been accounted for in the schedule. Days 11-13 (June 12-14) have not changed from the original baseline schedule. All days have the nominal 11 hour schedule unless otherwise noted.

Tentative Schedule of Test Days 4-10 (June 2-June 10)

Test Day 4 (June 2) (16 hours)

- CELIAS
- SSR test
- LASCO test of transition to submode 2
- CEPAC
- AOCS (3 hours)

Test Day 5 (June 3)

- Polarity check
- LIT trouble shooting

- CDS

Test Day 6 (June 6) (16 hours)

- CDS
- Warm start up

Test Day 7 (June 7) (15 hours)

- MDI
- GOLF

Test Day 8 (June 8)

- MDI
- SUMER

Test Day 9-10 (June 9-10)

- 36 hour continuous LEOP sequence

From: MX%"cst@sdac.gsfc.nasa.gov" 3-JUN-1995 02:55:20.32  
To: MX%"vdomingo@soho.estec.esa.nl",MX%"lsanchez@soho.estec.esa.nl",MX%"bfle  
CC:  
Subj: GSCT#2 summary for test day 4

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Sat, 03 Jun 1995 02:55:18 EDT

Date: Sat, 3 Jun 1995 02:53:26 -0400

Message-ID: <95060302532611@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: vdomingo@soho.estec.esa.nl, lsanchez@soho.estec.esa.nl,  
bfleck@soho.estec.esa.nl, pmartens@lion.nascom.nasa.gov,  
kim@ecsman.nascom.nasa.gov, elarduinat@ess-mail.atsc.allied.com,  
rock@quake.stanford.edu, scott@quake.stanford.edu,  
walter.schmidt@fmi.fi, curdt@linax1.dnet.gwdg.de,  
howard@maple.nrl.navy.mil, scott@argus.nrl.navy.mil,  
wang@cedar.nrl.navy.mil, eit@xanado.nascom.nasa.gov,  
mueller-mellin@kernphysik.uni-kiel.d400.de, lumme@sara.utu.fi,  
galvin@umdsp.umd.edu, wurz@phim.unibe.ch, buergi@mpg-garching.mpg.de,  
petrou@sapvxg.saclay.cea.fr, cfrohlich@ezrz1.vmsmail.ethz.ch,  
fgr@ll.iac.es, harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: GSCT#2 summary for test day 4

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

FROM: K. Walyus

GSCT#2 Summary for Test Day 4 (June 2)

- FOT testing began at 02:22 (local) and completed at 14:30.

- On test day 4, the FOT completed testing of CELIAS and had  
started testing the CEPAC instrument when the command link was lost.  
No additional testing was possible for that day, while MMS personnel  
worked to re-establish the link. The link was re-established at 17:50 (local)  
and test commands were sent from the POCC to verify the link in  
preparation for testing tomorrow. Additionally, with the SCOE once  
again working, the FOT were able to accomplish 1 hour of PCPG  
(Payload Calibration Profile Generator) testing.

- The tentative schedule through June 10 is listed below. Except for  
three hours of AOCS testing, three hours of LASCO testing, and six  
hours of CDS testing, all activities have been accounted for in the  
schedule. ESA will work with MMS to arrange additional test time  
during next week to account for the missing twelve hours. Days 11-13  
(June 12-14) have not changed from the original baseline schedule.

Tentative Schedule of Test Days 5-10 (June 3-June 10)

Test Day 5 (June 3) (12 hours)

- Polarity check
- Roll steering
- LIT trouble shooting
- CEPAC
- PCPG test
- SSU

From: MX%"cst@sdac.gsfc.nasa.gov" 5-JUN-1995 06:32:52.65  
To: MX%"vdomingo@soho.estec.esa.nl",MX%"lsanchez@soho.estec.esa.nl",MX%"bfle  
CC:  
Subj: K. Walyus Summary of Day 5 GSCT#2 activities

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Mon, 05 Jun 1995 06:32:50 EDT

Date: Mon, 5 Jun 1995 06:30:53 -0400

Message-ID: <95060506305303@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: vdomingo@soho.estec.esa.nl, lsanchez@soho.estec.esa.nl,  
bfleck@soho.estec.esa.nl, pmartens@lion.nascom.nasa.gov,  
kim@ecsman.nascom.nasa.gov, elarduinat@ess-mail.atsc.allied.com,  
rock@quake.stanford.edu, scott@quake.stanford.edu,  
walter.schmidt@fmi.fi, curdt@linax1.dnet.gwdg.de,  
howard@maple.nrl.navy.mil, scott@argus.nrl.navy.mil,  
wang@cedar.nrl.navy.mil, eit@xanado.nascom.nasa.gov,  
muller-mellin@kernphysik.uni-kiel.d400.de, lumme@sara.utu.fi,  
galvin@umdsp.umd.edu, wurz@phim.unibe.ch, buergi@mpg-garching.mpg.de,  
petrou@sapvxg.saclay cea.fr, cfrohlich@ezrz1.vmsmail.ethz.ch,  
fgr@lliac.es, harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: K. Walyus Summary of Day 5 GSCT#2 activities

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

GSCT#2 Summary for Test Day 6 (June 3)

- FOT testing began at 02:35 (local) and completed at 14:00.

- On day 5 the FOT completed testing of the CEPAC instrument. On the SVM, the FOT completed the polarity check although the FPSS portion of the test was dropped due to hardware limitations at MMS.

Testing of the roll steering law update and the PCPG sequence test will be postponed to a later test date due to the spacecraft not being in the proper configuration to support this test. The PCPG sequence test and the roll steering law update will be conducted in parallel with instrument observation time during next week.

- One hour of test time was also devoted to analyzing the anomaly associated with the large instrument table loads. Two LASCO background queue loads were sent five times with respective delays of 5, 4, 3, 2, and 1 second. All commands went through without error. Four LASCO command loads were then sent with delays of one second, and then again with zero seconds. The LASCO commands at one second worked, although the commands with a zero second delay failed. The CEPAC delayed command load that failed yesterday (with a delay of one second) was resent, and this time the command worked. Similarly an MDI background queue command was sent with a delay of one second and it also worked. If time permits on Tuesday, the FOT will attempt to recreate the CELIAS error. All commands on Tuesday (except for the CELIAS test) will use the five second delay.

- On test day 6 the FOT will begin testing of CDS and perform the warm start-up test. Current plans are to test for 16 hours on Tuesday with 14 hours being reserved for CDS and two hours being reserved for the warm start-up. ESA/MMS must confirm that 16 hours are available



for testing on Tuesday. If only 15 hours of testing are available, then CDS will only be able to test for 13 hours on Tuesday, and one more hour of CDS testing will have to be accounted for at a later date.

- The tentative schedule through June 10 is listed below. Except for three hours of AOCS testing, three hours of LASCO testing, and six hours of CDS testing, all activities have been accounted for in the schedule. ESA will work with MMS to arrange additional test time during next week to account for the missing twelve hours. Days 11-13 (June 12-14) have not changed from the original baseline schedule.

#### Tentative Schedule of Test Days 6-10 (June 6-10)

##### Test Day 6 (June 6) (16 hours)

- CDS
- PCPG sequence (if time available)
- Roll steering law update (if time available)
- Warm start-up
- Recreation of CELIAS NRT error (if time allows)

##### Test Day 7 (June 7) (15 hours)

- MDI
- GOLF

##### Test Day 8 (June 8) (11 hours)

- MDI
- SUMER

##### Test Day 9-10 (June 9-10)

- 36 hour continual L&EOP Sequence

From: MX%"cst@sdac.gsfc.nasa.gov" 7-JUN-1995 07:49:43.22  
To: MX%"soc@soc.nascom.nasa.gov",MX%"vdomingo@soho.estec.esa.nl",MX%"lsanche  
CC:  
Subj: GSCT#2 Day 6 summary

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Wed, 07 Jun 1995 07:49:41 EDT

Date: Wed, 7 Jun 1995 07:37:16 -0400

Message-ID: <95060707371612@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: soc@soc.nascom.nasa.gov, vdomingo@soho.estec.esa.nl,  
lsanchez@soho.estec.esa.nl, bfleck@soho.estec.esa.nl,  
pmartens@lion.nascom.nasa.gov, kim@ecsman.nascom.nasa.gov,  
elarduinat@ess-mail.atsc.allied.com, rock@quake.stanford.edu,  
scott@quake.stanford.edu, walter.schmidt@fmi.fi,  
curdt@linax1.dnet.gwdg.de, howard@maple.nrl.navy.mil,  
scott@argus.nrl.navy.mil, wang@cedar.nrl.navy.mil,  
eit@xanado.nascom.nasa.gov, mueller-mellin@kernphysik.uni-kiel.d400.de,  
lumme@sara.utu.fi, galvin@umdsp.umd.edu, wurz@phim.unibe.ch,  
buergi@mpg-garching.mpg.de, petrou@sapvixg.saclay.cea.fr,  
cfrohlich@ezrz1.vmsmail.ethz.ch, fgr@ll.iac.es,  
harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: GSCT#2 Day 6 summary

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

GSCT#2 Summary for Test Day 6 (June 06) -- CSt version

- FOT testing began at 02:00 (local) and completed at 14:20.

- On day 6, the FOT completed the first portion of CDS testing  
and completed the PCPG sequence. At the end of the day the FOT  
also re-created the CELIAS NRT problem.

- Preliminary results from the continuing analysis of the NRT commanding  
problems indicate that NASA's PDF interface in Toulouse (between the  
telephone line and the CCS front end) may be the site of the problem.  
Further analysis will be necessary to confirm this, but the remainder  
of GSCT#2 commanding will be performed with a 3 second delay between commands  
leaving the POCC. This delay should provide sufficient margin to keep  
the CCS from crashing. If problems occur at this delay rate, the delay  
will be increased to 5 seconds.

- In order to complete the scheduled CDS time, the FOT may have to truncate  
the LEOP testing by one hour.

- The tentative schedule through June 14 is listed below.

Test Day 7 (June 7) (12 hours)

- MDI (9 hours)
- Warm start-up (3 hours)
- Individual thruster firing (if time available)
- SSR test (if time available)
- Roll steering law update (if time available)
- SSU/SEU (if time available)

Test Day 8 (June 8) (24 hours)

- MDI (8 hours)
- SUMER (5 hours)
- GOLF (3 hours)
- LASCO (3 hours)
- CDS (5 hours)

Test Day 9-10 (June 9-10) (24 hours)

- CDS (1 hour)
- 35 hour continual LEOP sequence (until 14:00 Saturday)

Test Day 11 (June 12)

- System test (multi-experiment commanding)

Test Day 12 (June 13)

- System test (multi-experiment NRT)

Test Day 13 (June 14)

- AOCS-ESR test

From: MX%"cst@sdac.gsfc.nasa.gov" 9-JUN-1995 01:52:54.83  
To: MX%"soc@soc.nascom.nasa.gov",MX%"vdomingo@soho.estec.esa.nl",MX%"lsanche  
CC:  
Subj: GSCT#2 Summary for test day 8

Return-Path: <cst@sdac.gsfc.nasa.gov>  
Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Fri, 09 Jun 1995 01:52:52 EDT  
Date: Fri, 9 Jun 1995 01:48:55 -0400  
Message-ID: <95060901485550@sdac.gsfc.nasa.gov>  
From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))  
To: soc@soc.nascom.nasa.gov, vdomingo@soho.estec.esa.nl,  
lsanchez@soho.estec.esa.nl, bfleck@soho.estec.esa.nl,  
pmartens@lion.nascom.nasa.gov, kim@ecsman.nascom.nasa.gov,  
elarduinat@ess-mail.atsc.allied.com, rock@quake.stanford.edu,  
scott@quake.stanford.edu, walter.schmidt@fmi.fi,  
curdt@linax1.dnet.gwdg.de, howard@maple.nrl.navy.mil,  
scott@argus.nrl.navy.mil, wang@cedar.nrl.navy.mil,  
eit@xanado.nascom.nasa.gov, mueller-mellin@kernphysik.uni-kiel.d400.de,  
lumme@sara.utu.fi, galvine@umdsp.umd.edu, wurz@phim.unibe.ch,  
buergi@mpg-garching.mpg.de, petrou@sapvvg.saclay cea.fr,  
cfrohlich@ezrz1.vmsmail.ethz.ch, fgr@ll.iac.es,  
harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov  
Subject: GSCT#2 Summary for test day 8  
X-VMS-To: @SUMMARY  
X-MX-Warning: VMS Mail To: line does not include all To: addresses

#### GSCT#2 Summary for Test Day 8 (June 08)

- FOT testing began at 03:00 (local) and continues.
  - The FOT completed the MDI, GOLF, and SUMER testing.
  - The tentative schedule through June 14 is listed below.
- During continual operations, shift change briefings will occur  
at 01:00 and 13:00 each day.

- In order to complete the CDS testing, the FOT may not begin the  
LEOP testing until 04:30 on test day 9. This delay would leave only  
33.5 hours to test the LEOP sequence (originally baselined as 36 hours).  
If the LEOP activities are not complete by 14:00 Saturday, the  
remaining LEOP activities will be deleted.

#### Tentative schedule for test days 8-13 (June 8-14)

##### Test Day 8 (08 June)

- MDI (completed)
- GOLF (completed)
- SUMER (completed)
- LASCO and CDS turn-on (1.5 hours)
- LASCO (3 hours)
- CDS (3.5 hours)
- SSR test (if time available)

##### Test Day 9-10 (09-10 June)

- CDS (2.5 hours)
- 33.5 hours continual LEOP sequence (or until 14:00 Saturday)

- Individual thruster firing (if time available)
- Roll steering law update (if time available)
- SSU/SEU (if time available)

Test Day 11 (12 June)

- System test -- multi-experiments

Test Day 12 (13 June)

- System test -- simultaneous NRT

Test Day 13 (14 June)

- AOCS - ESR test

From: MX%"cst@sdac.gsfc.nasa.gov" 10-JUN-1995 02:55:42.20  
To: MX%"soc@soc.nascom.nasa.gov",MX%"vdomingo@soho.estec.esa.nl",MX%"lsanche  
CC:  
Subj: GSCT#2 Summary for test day 9

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Sat, 10 Jun 1995 02:55:40 EDT

Date: Sat, 10 Jun 1995 02:54:28 -0400

Message-ID: <95061002542843@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: soc@soc.nascom.nasa.gov, vdomingo@soho.estec.esa.nl,  
lsanchez@soho.estec.esa.nl, bfleck@soho.estec.esa.nl,  
pmartens@lion.nascom.nasa.gov, kim@ecsman.nascom.nasa.gov,  
elarduinat@ess-mail.atsc.allied.com, rock@quake.stanford.edu,  
scott@quake.stanford.edu, walter.schmidt@fmi.fi,  
curdt@linax1.dnet.gwdg.de, howard@maple.nrl.navy.mil,  
scott@argus.nrl.navy.mil, wang@cedar.nrl.navy.mil,  
eit@xanado.nascom.nasa.gov, mueller-mellin@kernphysik.uni-kiel.d400.de,  
lumme@sara.utu.fi, galvin@umdsp.umd.edu, wurz@phim.unibe.ch,  
buergi@mppe-garching.mpg.de, petrou@sapvixg.saclay cea.fr,  
cfrohlich@ezrz1.vmsmail.ethz.ch, fgr@ll.iac.es,  
harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: GSCT#2 Summary for test day 9

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

GSCT#2 Summary for Test Day 9 (June 09) as of 18:00 loca

- Since the beginning of test day 8 at 02:00 (local), the test team has been operating continuously. Testing activities are scheduled until 14:00 on Saturday.

- On day 9 the FOT completed testing of LASCO and CDS, and they are now progressing through the LEOP sequence, which began at 05:00.

- On Saturday (day 10) the shift-change briefing will occur at 01:00, a status update will be presented at 09:00, and the day's debriefing will be one-half hour after completion of the day's activities (estimated time of debrief 14:30).

- Due to the tight schedule for completing the LEOP sequence, several activities will be postponed until next week (individual thruster firing, roll steering law update, and SSU/SEU tests). Due to technical problems with testing the SSR, this will also be postponed. ESA/MMS will investigate the possibility of adding time to next week's schedule to allow the FOT to complete these tests.

- The tentative schedule through June 14 is listed below.

Test Day 9-10 (09-10 June)

- CDS (completed)
- 33.5 hours continual LEOP sequence (or until 14:00 Saturday)

Test Day 11 (12 June)

- System test -- multi-experiments

Test Day 12 (13 June)

- System test -- simultaneous NRT

Test Day 13 (14 June)

- AOCS - ESR test

Tests Remaining to be scheduled:

- Individual thruster firing (if time available)
- Roll steering law update (if time available)
- SSU/SEU (if time available)

From: MX%"cst@sdac.gsfc.nasa.gov" 12-JUN-1995 13:44:42.31  
To: MX%"soc@soc.nascom.nasa.gov",MX%"vdomingo@soho.estec.esa.nl",MX%"lsanche  
CC:  
Subj: GSCT#2 Summary for test day 10

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Mon, 12 Jun 1995 13:44:39 EDT

Date: Mon, 12 Jun 1995 03:10:05 -0400

Message-ID: <95061203100555@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: soc@soc.nascom.nasa.gov, vdomingo@soho.estec.esa.nl,  
lsanchez@soho.estec.esa.nl, bfleck@soho.estec.esa.nl,  
pmartens@lion.nascom.nasa.gov, kim@ecsman.nascom.nasa.gov,  
elarduinat@ess-mail.atsc.allied.com, rock@quake.stanford.edu,  
scott@quake.stanford.edu, walter.schmidt@fmi.fi,  
curdt@linax1.dnet.gwdg.de, howard@maple.nrl.navy.mil,  
scott@argus.nrl.navy.mil, wang@cedar.nrl.navy.mil,  
eit@xanado.nascom.nasa.gov, mueller-mellin@kernphysik.uni-kiel.d400.de,  
lumme@sara.utu.fi, galvin@umdsp.umd.edu, wurz@phim.unibe.ch,  
buergi@mpg-garching.mpg.de, petrou@sapvvg.saclay cea.fr,  
cfrohlich@ezrz1.vmsmail.ethz.ch, fgr@ll.iac.es,  
harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: GSCT#2 Summary for test day 10

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

GSCT#2 Summary for Test Day 10 (10 June)

- The test team completed the 60 continuous hours of testing at 14:30 (local) today.

- The FOT completed the LEOP sequence; however, the results of some parts were not satisfactory and will need to be regression tested. Total non-budgeted test time is now estimated at nine hours (including the regression testing). ESA is currently investigating the possibility of adding another night shift operation between Tuesday and Wednesday, which would give 36 hours of continuous testing beginning Tuesday at 02:00 and concluding at 14:00 Wednesday.

- The FOT will give a preliminary debrief after the conclusion of the test on Wednesday.

- The tentative schedule is listed below:

Test Day 11 (12 June)

- System test; multi-experiment tasks; 1.6 hour pass

Test Day 12 (13 June)

- System test; multi-experiment tasks; 8 hour pass

Test Day 13 (14 June)

- AOCS-ESR test



From: MX%"cst@sdac.gsfc.nasa.gov" 13-JUN-1995 03:19:30.39  
To: MX%"soc@soc.nascom.nasa.gov",MX%"vdomingo@soho.estec.esa.nl",MX%"lsanche  
CC:  
Subj: Summary for test day 11 of GSCT#2

Return-Path: <cst@sdac.gsfc.nasa.gov>

Received: from SDAC (sdac.gsfc.nasa.gov) by UMDSP.UMD.EDU (MX V4.0-1 VAX) with  
SMTP; Tue, 13 Jun 1995 03:19:27 EDT

Date: Tue, 13 Jun 1995 03:10:58 -0400

Message-ID: <95061303105848@sdac.gsfc.nasa.gov>

From: cst@sdac.gsfc.nasa.gov (CHRIS ST.CYR/ATSC/SOHO/682/GSFC  
(301-286-2941))

To: soc@soc.nascom.nasa.gov, vdomingo@soho.estec.esa.nl,  
lsanchez@soho.estec.esa.nl, bfleck@soho.estec.esa.nl,  
pmartens@lion.nascom.nasa.gov, kim@ecsman.nascom.nasa.gov,  
elarduinat@ess-mail.atsc.allied.com, rock@quake.stanford.edu,  
scott@quake.stanford.edu, walter.schmidt@fmi.fi,  
curdt@linax1.dnet.gwdg.de, howard@maple.nrl.navy.mil,  
scott@argus.nrl.navy.mil, wang@cedar.nrl.navy.mil,  
eit@xanado.nascom.nasa.gov, mueller-mellin@kernphysik.uni-kiel.d400.de,  
lumme@sara.utu.fi, galvin@umdsp.umd.edu, wurz@phim.unibe.ch,  
buergi@mpg-garching.mpg.de, petrou@sapvxg.saclay cea.fr,  
cfrohlich@ezrz1.vmsmail.ethz.ch, fgr@ll.iac.es,  
harrison@solg2.bnsc.rl.ac.uk, payne@solg2.bnsc.rl.ac.uk,  
macwan@orpheus.nascom.nasa.gov, lwang@orpheus.nascom.nasa.gov,  
lutter@orpheus.nascom.nasa.gov

Subject: Summary for test day 11 of GSCT#2

X-VMS-To: @SUMMARY

X-MX-Warning: VMS Mail To: line does not include all To: addresses

GSCT#2 Summary for Test Day 11 (12 June)

- FOT testing began at 04:55 (local and completed at 15:20.
- FOT testing on day 11 included a simulation of the nominal 1.6 hour pass and a test of the thruster firing function. The PI teams also conducted combined NRT testing.
- The duration for test day 12 has been lengthened to 13 hours and is scheduled to compete at 15:00. The FOT has requested that the day be lengthened to 16:00 in order to complete all scheduled activities.
- On Wednesday the FOT will give a preliminary debrief after the conclusion of the test.

Tentative Test Schedule

Test Day 12 (13 June)

- System test with experiments, simultaneous NRT commanding
- Roll steering law update
- Warm start-up procedures
- Remaining SSR tests
- IIIDE test
- ESR warning flag receipt definition

Test Day 13 (14 June)

- AOCS-ESR test

From: MX%"vdomingo@esa.nascom.nasa.gov" 1-SEP-1995 08:47:58.58  
To: MX%"dhovestadt@solar.stanford.edu",MX%"galvin@umdsp.umd.edu"  
CC:  
Subj: GSCT#3 additional operation time

Return-Path: <vdomingo@esa.nascom.nasa.gov>  
Received: from gsfc.nasa.gov by UMDSP.UMD.EDU (MX V4.0-1 VAX) with SMTP; Fri,  
01 Sep 1995 08:47:56 EDT  
Received: from esa.nascom.nasa.gov by gsfc.nasa.gov (5.65/Ultrix3.0-C) id  
AA02947; Fri, 1 Sep 95 08:48:28 -0400  
Received: from seal.nascom.nasa.gov by esa (5.x/SMI-SVR4)id AA17679; Fri, 1 Sep  
1995 08:49:22 -0400  
Received: by seal.nascom.nasa.gov (SMI-8.6/SMI-SVR4)id IAA13896; Fri, 1 Sep  
1995 08:49:21 -0400  
Date: Fri, 1 Sep 1995 08:49:21 -0400  
From: vdomingo@esa.nascom.nasa.gov (Vicente Domingo)  
Message-ID: <199509011249.IAA13896@seal.nascom.nasa.gov>  
To: dhovestadt@solar.stanford.edu, galvin@umdsp.umd.edu  
Subject: GSCT#3 additional operation time  
X-Sun-Charset: US-ASCII

Dear Dieter, Toni,

This mal sohuld have been addressed to you as well.

Would you please let me known the e-mail address of Peter Wurz?

Best wishes, Vicente

----- Begin Included Message -----

From vdomingo Thu Aug 31 17:58:18 1995  
To: harrison@solg2.bnsc.rl.ac.uk, @estgtw.estec.esa.nl:nsp::linmpi::wilhelm, @es  
Subject: GSCT#3 additional operation time

To PI and EOF team representatives of CDS, SUMER, MDI, LASCO/EIT, UVCS,  
CEPAC:

Copy: C. Berner, K. Walyus, C. Cazeau, H. Schweitzer, A. Poland

In the GSCT#3 preliminary script there are allocatedthe following  
dedicated test periods:

MDI	4 hours NRT
LASCO/EIT	4 hr NRT
CDS	1 hr MCU test
UVCS	6.5 hr TSTOL & 6 hr NRT (12.5 hr total)

After your replies and discussion at the meetings at KSC (PI debriefing  
and SFT review), my understanding of additional requirements for  
operation during the GSCT#3 are the following:

CEPAC	4 hours TSTOL procedures (at least)
SUMER	2 hr dedicated NRT - focusing mechanism lock
CDS	2 hr dedicated NRT - tentative - to be confirmed Sept 5th.
CELIAS	4 hr TSTOL procedures

This amounts to additional 12 hours. After discussing with the FOT people we realize that if we use one of 8-hour nominal pass (day 8) we are still left with 4 hours that cannot be accomodated within the 9 days foreseen for GSCT#3.

It appears that either an additional day will have to be added to GSCT#3 or that some days will have to grow longer.

Please verify that your requirements are correct and reply to me as soon as possible, by early September 5th (US EST) at the latest.

Vicente Domingo

----- End Included Message -----

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 13-SEP-1995 19:45:41.55  
To: @CAZEAU  
CC: @SOWG,GALVIN  
Subj: celias set up for esr test

Dear Carline,

The following is the proposed setup for the CELIAS experiment for the ESR configuration. It is what we attempted to do during GSCT#2, but there were some errors in the command database, which should now be corrected.

Best regards, Toni Galvin

The CELIAS experiment should be placed in the following configuration for the ESR test. (It is assumed here that Matra is handling the experiment set up to save time.)

- (1) Perform Elisa procedure CLS\_ON

CELIAS DPU on  
ESR response commanded to "power off" (command may go into  
affect either within a few minutes, or 21  
hours later)

- (2) Configure ESR response to "standby"

Send FBCESRSB

Verify fsdesrd is "Standby "

- (3) Configure sensors for test

Send FBCMOD1I                   CTOF standby mode, immediate  
Send FBMMOD1I                  MTOF standby mode, immediate  
Send FBSMOD0I                  STOF power off mode, immediate

The above can also be done using the following Elisa procedures:

CLS\_CTOF\_ON  
CLS\_MTOF\_ON  
CLS\_STOF\_OFF

Verify fsdmods is "Power Off"  
fsdmodc is "Standby"  
fsdmodm is "Standby"

Send FBCMOD3I                  CTOF verify mode, immediate

The above can also be done using the following Elisa procedure:

CLS\_CTCAL\_ON

Verify fsdmodc is "Verify"

AFTER ESR FLAG IS RECEIVED:

- (4) Experimenter will check that the following occurred:

Verify fsdmodc is "Standby"  
fsdmodm is "Standby"  
fsdmods is "Power Off"

AFTER THE TEST COMPLETION:

- (5) If possible, before the power off of the experiment perform the following xTOF power off procedures:

CLS\_CTOF\_OFF  
CLS\_MTOF\_OFF  
CLS\_STOF\_OFF

From: UMDSP::GALVIN "Toni Galvin (Univ. Md)" 17-OCT-1995 15:56:07.26  
To: @SOWG,MPE::BEK,@HOVESTADT  
CC: GALVIN  
Subj: response to inquiry from Berndt Klecker and Fritz Gliem

Dear Kay, Please make a hard copy for Fritz, as I am too lazy to go to the fax machine!

With regard to my travel schedule (in the event of an GSCT#4, which is currently being discussed): I will be at a Ulysses workshop and SWT the week of Oct 22-29. This is the same week as the SOHO AFT and the ACE meeting at the Cape. If the project decides on an GSCT#4 on the same week, I suspect we will have personnel problems. At this time no date has been fixed for the proposed (i.e., tentative) GSCT#4.

Again, with regard to another GSCT#4:

- (1) Although I have a promise from Carline Cazeau (FOT) that the database for a Nov launch will have the fixes to our database that became apparent after GSCT#3, I will have to check to see if it would be ready by an earlier date for GSCT#4. This affects the DPU Modify memory commands and associated procedures, although we would have a binary command option if necessary.
- (2) Depending on the order of HV-Disable plug removal and the GSCT#4, please be careful what you decide to test! I am saying this mainly for CTOF and STOF, since my impression is that you routinely command your HV's during SFT's. I will want an EXPLICIT statement from each LEAD COI stating what is OK to do! I have been told (by Dieter) that Heiner is removing CTOF plugs early, while he is at the Cape. If so, CTOF will be "at risk" longer than the other sensors.

With regard to F. Gliem's and K. Reiche's fax:

I discussed some of this with Chris StCyr during the last GSCT#3. These things have a way of changing over time, and also depends on whom you talk to. If anything I say does not sound correct, or if you want something else, just say so and I will check it out with the EOF people. They are pretty good at accommodating us, although right now our name is Mudd because of the procedure business. (For the non-Americans, to say one's name is Mudd means you are in trouble. Dr. Mudd treated Abe Lincoln's assassin for a broken leg - not knowing who he was treating. He was convicted of treason for it.)

Local operations:

Let me break this up into EOF and EAF:

In the EOF (building 3), we currently have three PC workstations, designated CELIAS, CELIAS2, CELIAS3, and a functional address for CELIAS4 (which we have used for laptop computers - both Macintosh (Wurz and myself have Mac's) and PC (Gruenwaldt tried this out at GSTC#3 as a possible CTOF GSE)). In other words, we can FOR SURE at REAL TIME DATA on at least four workstations at the EOF. I specifically asked St Cyr about additional workstations, and they are not a problem as far as getting a connection. There is at least one more ethernet wall socket available in our corner. BUT I THINK THAT FIVE PC'S ON TWO TABLES WOULD BE SUPER CROWDED. So yes, I think we can get a fifth address if we want it - but do we?

Another item: we can also opt for just ethernet access, but not ask to get on the REAL TIME socket. That was useful for the Macintosh laptops, which of course do not have the PC-based GSE programs.

In the EOF, we can command from any of the PC's, but only one at a time (again, as in Gliem's fax). Commands will either be by NRT, or using FOT-commanding (via TSTOL procedures - required for CRITICAL commands, or via Predefined Command Sequence files, which cannot do critical commands, but can do "not-allowed for NRT" commands.)

Here is where I deviate from Gliem's Fax:

In addition to the EOF, there is the EAF (in building 26). We have one desk area in the EAF for CELIAS use. We can have as many computers there as will fit. There will be ethernet connections available. We cannot receive REAL TIME data outside of the EOF, nor can we do NRT commanding outside of the EOF. BUT, you can

- (1) transport (via FTP or floppy disk) data that was recorded on the EOF GSE's and replay the recorded data on a PC that could be located at the EAF.
- (2) You can receive EOF ARCHIVE TELEMETRY data (\*.REL or \*.QKL files) that contain data that is about 2 hours old. This data is similar to what we get on the CD-ROMS, except for a difference in the header.

I discussed the REL and QKL format with Thomas Hauck last year. He informed me that the GSE program cannot read it, nor were there plans to change that. I also discussed this with Peter Wurz, and he indicated that Bern would be handling the Level 0 (i.e., CD-ROM type data), but would not be explicitly responsible for the archive telemetry data. However, he did take a look at the data files, and I do not know if there is an update on that aspect or not. We at UMD have started looking at the \*.REL data, and find it pretty straight forward (which is not an offer to volunteer to do any body's programming!).

In other words, the situation at the EAF is pretty much as before: If we have an alpha Vax, we can look at Level 0 type data using the Bern program, but can only look at GSE data (recorded, not live) with a PC. No live data will be available, but data within 2 hours for \*.REL and >15 minutes for GSE. (However, I do not know if you can both record data on the EOF GSE and FTP earlier recorded data to another location simultaneously.)

Whether it is useful to bring the alpha vax to the EAF depends on the state of the analysis programming, so I cannot answer that query. I think we should at least have laptops for communication/office type functions.

REMOTE: Any data we can get at the EAF, we can get anywhere. The various files (e.g., \*.REL) are already being sent to UMD and to MPE. The Level 0 data should become available electronically about 1 -2 days after acquisition. That is process by the CDHF, so it takes

more time. Later, CDHF puts the same data on CD-ROM and sends it out. This is similar to WIND.

Sending GSE data remotely requires, I believe, that someone be manually recording, archiving, and ftp-ing the data out. Gliem and Reiche should correct me if this can be automated?

REMOTE COMMANDING: This can be either by delayed command, or by FOT TSTOL procedures. Theoretically, we can also ask the project scientist to send commands for us, but then we are responsible for having software that works on his workstation. That means translating the GSE s/w from a PC-based to whatever the PS workstation uses. I do not see this happening on our team.

Anyway, this is how I understand it.

Berndt: I will have a copy of that document sent out (I found one dated may 1995! - it is not the final version , but the last one that has been distributed).

Heiner - I will see about decompressing those files. I CANNOT help you on whether or not data words in a particular command require byte swapping or not. That is between you and Kay, at least until I have some documentation from Kay on how the commands work. If you do not know if certain commands in a procedure are valid or not, I do not particularly recommend having the procedure submitted to the FOT - where we will end up using wrong data words forever. You need to decide on that, before submission. These procedures are meant to increase our level of safety and surety, and should have a certain confidence level inherent in their use.

best regards, Toni



From: UMDSP::SOHO 19-OCT-1995 17:07:28.44  
To: @SOWG  
CC: @HOVESTADT,SOHO  
Subj: upcoming gsct#4 - procs and database

Dear colleagues,

I have just spoken to Carline Cazeau of the FOT. As you know, there is an upcoming GSCT#4, which may occur sometime within the next two weeks. (Possibly the weekend of Oct 28-29, although new dates are rumored for the 30 Oct.)

(1) This Sunday, 22 October, the new Project Data Base will be implemented at the FOT computer. This will include our DPU command corrections that were found after the GSCT#3. This will not include the new error found in the STOF command list, that was just reported this week.

(2) OK, the bad news. Our new procedures will not be ready in time for a test that starts in October. Carline says that if we have 2, repeat 2, new procedures that we really need to test out, we should send her those names (by new, I mean that we have already sent to her these past couple of weeks), and she will give them top priority in getting done in time for GSCT#4.

I suggest that we re-test the corrected f\_ts\_sw\_patch procedure. This will do two things (1) check the new binary equivalent in the command data base, whose error was not discovered until we tried this procedure in GSCT#3, and (2) check the corrected data word, whose error was not discovered until the DPU reset itself during GSCT#3.

Otherwise, I suggest trying to work within the existing test procedures, maybe choosing two new ones that are important. (I suggest that this be chosen from among STOF, MTOF and DPU, as the CTOF procedures do not have any chance of being ready in time - but that decision is up to the PI/Lead-Coins).

If we have an option, we should make sure we get some NRT command time as well as FOT procedure command time. Commands that are "ALLOWED" and "NOT CRITICAL" can be tested out NRT.

Carline says there will not be any time available to create new PCS files, for RCR use.

regards, Toni